

FCC TEST REPORT (15.247)

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MODEL NO.: WAP561

FCC ID: PD5-WAP561

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ISSUED: Nov. 01, 2012

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120926C25	Original release	Nov. 01, 2012



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1. CERTIFICATION

PRODUCT: Wireless AP with PoE

MODEL NO.: WAP561

BRAND: CISCO

APPLICANT: Delta Networks, Inc.

TESTED: Oct. 04 ~ Oct. 31, 2012

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10-2009

The above equipment (model: WAP561) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Maggie Wu , DATE : Nov. 01, 2012
Maggie Wu / Specialist

APPROVED BY : Ken Liu , DATE : Nov. 01, 2012
Ken Liu / Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -4.46dB at 0.71140MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin are -1.0dB at 2483.50MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.19 dB
	200MHz ~1000MHz	3.21 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless AP with PoE
MODEL NO.	WAP561
POWER SUPPLY	48Vdc (from POE)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	642.17mW for 2412 ~ 2462MHz 447.98mW for 5745 ~ 5825MHz
ANTENNA TYPE	Refer to note for more details
ANTENNA CONNECTOR	Refer to note for more details
DATA CABLE	N/A
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	N/A

NOTE:

1. The EUT incorporates a MIMO function. Physically, the EUT provides three completed transmitters and three receivers.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	3TX
802.11a	3TX
802.11n (20MHz)	3TX
802.11n (40MHz)	3TX

2. The EUT uses following antennas.

Antenna item	Antenna type	Connector	Gain (dBi)		X-plane		Z-plane	
			2.4GHz	5GHz	WLAN 0	WLAN 1	WLAN 0	WLAN 1
1	Dipole	IPEX	5.0	5.6	√		√	
2	Dipole		4.5	5.8		√		√
3	PIFA		3.3	4.5	√			
4	Dipole		4.3	4.8			√	
5	PIFA		3.7	5.2	√			
6	Dipole		5.0	5.8			√	
7	PIFA		4.2	4.5		√		
8	Dipole		4.9	5.4				√
9	PIFA		4.4	5.0		√		
10	Dipole		5.5	5.5				√

*For EUT position on X-plane, chosen highest antenna gain **WLAN 1** for final test.

*For EUT position on Z-plane, chosen highest antenna gain **WLAN 1** for final test.

3. The EUT consumes power from the following POE (for support unit only).

POE	
BRAND:	PowerDsine
MODEL:	PD-9001G
INPUT:	100-250Vac, 50/60Hz, 0.8A
OUTPUT:	55Vdc, 0.6A

4. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

FOR 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

FOR 5.0GHz (5745 ~ 5825MHz):

5 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	√	√	√	√	positioned on X-plane
B	√	√	-	-	positioned on Z-plane

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz
RE<1G: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission
APCM: Antenna Port Conducted Measurement

NOTE: “-” means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A, B	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A, B	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A, B	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11n (20MHz)	1 to 11	11	OFDM	BPSK	7.2

POWER LINE CONDUCTED EMISSION TEST:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11n (20MHz)	1 to 11	11	OFDM	BPSK	7.2

BANDEDGE MEASUREMENT:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Antony Lee
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
PLC	26deg. C, 65%RH	120Vac, 60Hz	Cedric Wu
APCM	24deg. C, 70%RH	120Vac, 60Hz	Brad Wu

FOR 5.0GHz (5745 ~ 5825MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	-	-	positioned on X-plane
B	√	√	√	√	positioned on Z-plane

Where **RE≥1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

NOTE: “-” means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A, B	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A, B	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11n (20MHz)	149 to 165	165	OFDM	BPSK	7.2

POWER LINE CONDUCTED EMISSION TEST:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11n (20MHz)	149 to 165	165	OFDM	BPSK	7.2



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BANDEDGE MEASUREMENT:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
B	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2
B	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
B	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
B	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
PLC	26deg. C, 65%RH	120Vac, 60Hz	Cedric Wu
APCM	24deg. C, 70%RH	120Vac, 60Hz	Brad Wu

3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

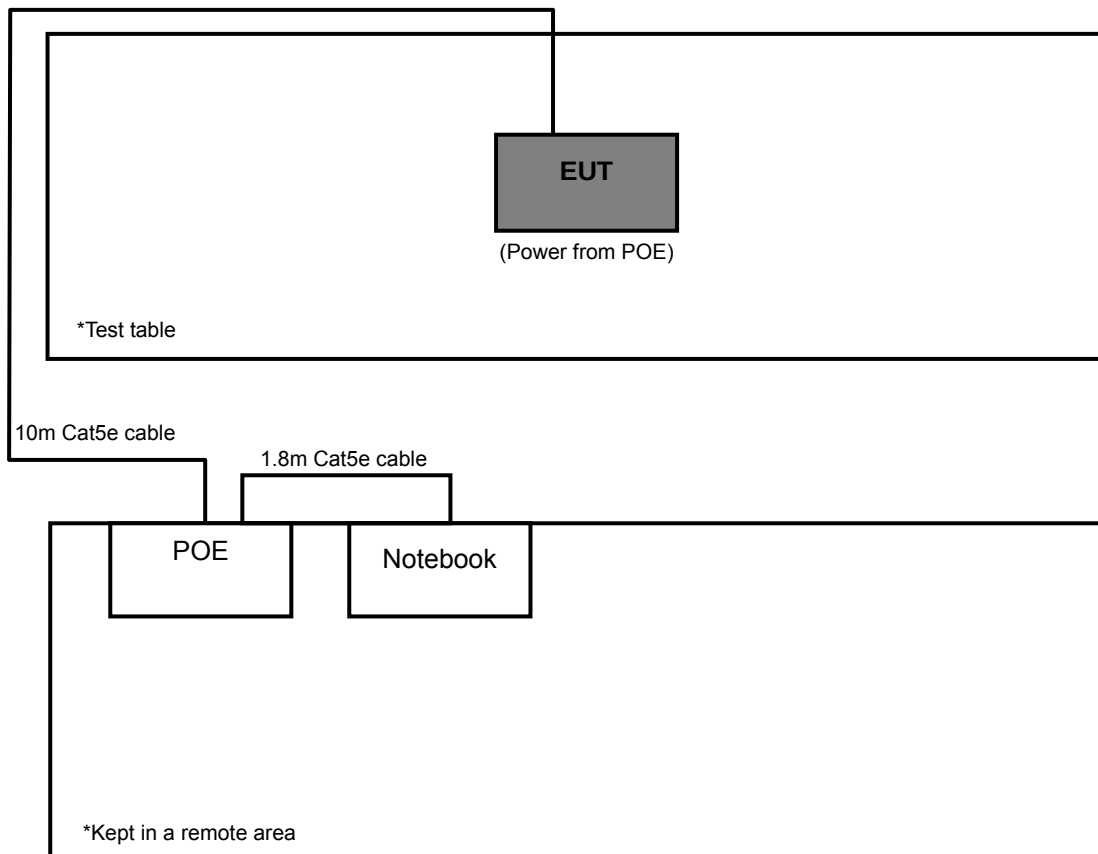
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved
2	POE	PowerDsine	PD-9001G	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m non-shielded Cat5e cable.
2	1.8m non-shielded Cat5e cable

NOTE:

1. All power cords of the above support units are non shielded (1.8m).
2. Item 1 acted as communication partner to transfer data.
3. Item 2 was provided by the manufacturer.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v02

662911 D01 Multiple Transmitter Output v01 r02

ANSI C63.10-2009

All test items have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



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4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Jan. 03, 2012	Jan. 02, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100039	Feb. 03, 2012	Feb. 02, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 06, 2012	Apr. 05, 2013
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-408	Jan. 05, 2012	Jan. 04, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Preamplifier Agilent	8449B	3008A01961	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8447D	2944A10738	Oct. 26, 2012	Oct. 25, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309220/4	Nov. 03, 2011	Nov. 02, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Nov. 03, 2011	Nov. 02, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Nov. 03, 2011	Nov. 02, 2012
Software ADT	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT	TT100.	TT93021704	NA	NA
Turn Table Controller ADT	SC100.	SC93021704	NA	NA
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Jan. 03, 2012	Jan. 02, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100039	Feb. 03, 2012	Feb. 02, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 06, 2012	Apr. 05, 2013

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 3.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 988962.
 5. The IC Site Registration No. is IC 7450F-3.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

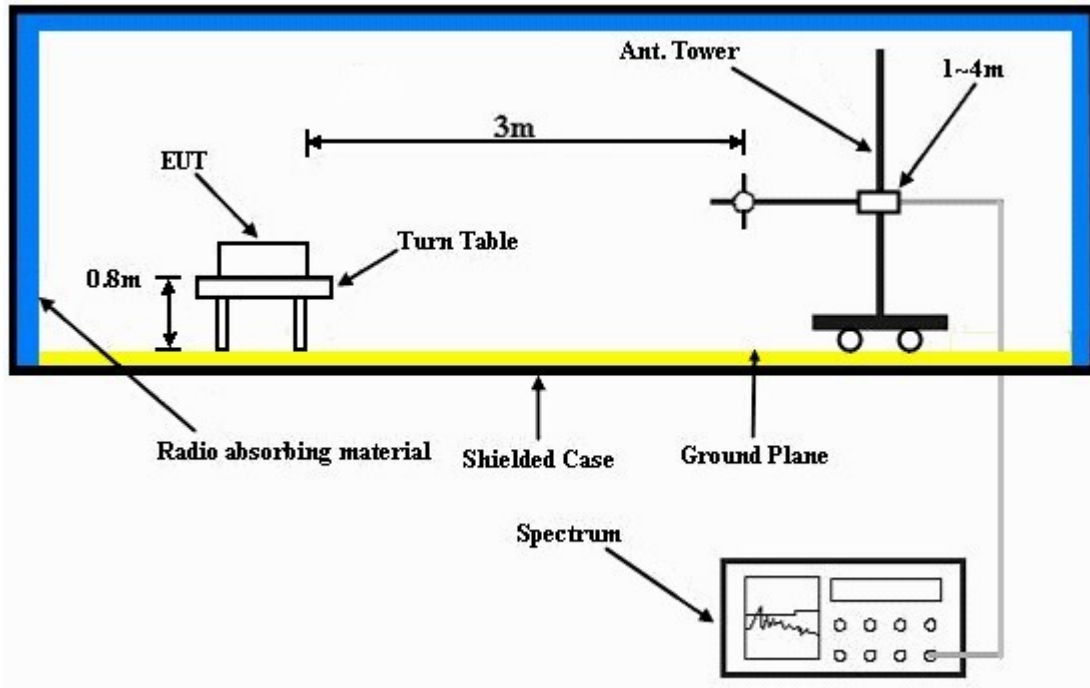
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

- Placed the EUT on the testing table.
- Prepared notebook to act as communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a Cat5e cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.



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4.1.7 TEST RESULTS (A)

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.3 PK	74.0	-17.7	1.08 H	160	25.50	30.80
2	2390.00	46.0 AV	54.0	-8.0	1.08 H	160	15.20	30.80
3	*2412.00	104.7 PK			1.08 H	160	73.80	30.90
4	*2412.00	100.5 AV			1.08 H	160	69.60	30.90
5	4824.00	52.3 PK	74.0	-21.7	1.22 H	350	15.30	37.00
6	4824.00	47.3 AV	54.0	-6.7	1.22 H	350	10.30	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.4 PK	74.0	-15.6	1.29 V	132	27.60	30.80
2	2390.00	48.1 AV	54.0	-5.9	1.29 V	132	17.30	30.80
3	*2412.00	107.7 PK			1.29 V	132	76.80	30.90
4	*2412.00	103.1 AV			1.29 V	132	72.20	30.90
5	4824.00	52.5 PK	74.0	-21.5	1.37 V	46	15.50	37.00
6	4824.00	47.5 AV	54.0	-6.5	1.37 V	46	10.50	37.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.1 PK			1.10 H	158	74.10	31.00
2	*2437.00	100.9 AV			1.10 H	158	69.90	31.00
3	4874.00	51.4 PK	74.0	-22.6	1.20 H	347	14.30	37.10
4	4874.00	45.4 AV	54.0	-8.6	1.20 H	347	8.30	37.10
5	7311.00	45.2 PK	74.0	-28.8	1.00 H	180	1.60	43.60
6	7311.00	40.9 AV	54.0	-13.1	1.00 H	180	-2.70	43.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.9 PK			1.27 V	147	76.90	31.00
2	*2437.00	103.8 AV			1.27 V	147	72.80	31.00
3	4874.00	50.9 PK	74.0	-23.1	1.34 V	360	13.80	37.10
4	4874.00	45.9 AV	54.0	-8.1	1.34 V	360	8.80	37.10
5	7311.00	46.4 PK	74.0	-27.6	1.00 V	360	2.80	43.60
6	7311.00	41.2 AV	54.0	-12.8	1.00 V	360	-2.40	43.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.0 PK			1.35 H	153	74.90	31.10
2	*2462.00	101.7 AV			1.35 H	153	70.60	31.10
3	2483.50	58.1 PK	74.0	-15.9	1.35 H	153	26.90	31.20
4	2483.50	47.2 AV	54.0	-6.8	1.35 H	153	16.00	31.20
5	4924.00	49.7 PK	74.0	-24.3	1.11 H	342	12.50	37.20
6	4924.00	42.4 AV	54.0	-11.6	1.11 H	342	5.20	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.4 PK			1.29 V	157	77.30	31.10
2	*2462.00	104.8 AV			1.29 V	157	73.70	31.10
3	2483.50	58.2 PK	74.0	-15.8	1.29 V	157	27.00	31.20
4	2483.50	47.4 AV	54.0	-6.6	1.29 V	157	16.20	31.20
5	4924.00	49.5 PK	74.0	-24.5	1.16 V	351	12.30	37.20
6	4924.00	40.7 AV	54.0	-13.3	1.16 V	351	3.50	37.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.4 PK	74.0	-1.6	1.09 H	150	41.60	30.80
2	2390.00	52.8 AV	54.0	-1.2	1.09 H	150	22.00	30.80
3	*2412.00	110.7 PK			1.06 H	149	79.80	30.90
4	*2412.00	101.3 AV			1.06 H	149	70.40	30.90
5	4824.00	48.9 PK	74.0	-25.1	1.00 H	25	11.90	37.00
6	4824.00	34.5 AV	54.0	-19.5	1.00 H	25	-2.50	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.7 PK	74.0	-5.3	1.07 V	301	37.90	30.80
2	2390.00	50.3 AV	54.0	-3.7	1.07 V	301	19.50	30.80
3	*2412.00	109.9 PK			1.05 V	262	79.00	30.90
4	*2412.00	100.1 AV			1.05 V	262	69.20	30.90
5	4824.00	48.5 PK	74.0	-25.5	1.20 V	25	11.50	37.00
6	4824.00	34.5 AV	54.0	-19.5	1.20 V	25	-2.50	37.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.1 PK			1.10 H	174	80.10	31.00
2	*2437.00	101.8 AV			1.10 H	174	70.80	31.00
3	4874.00	48.9 PK	74.0	-25.1	1.00 H	15	11.80	37.10
4	4874.00	34.4 AV	54.0	-19.6	1.00 H	15	-2.70	37.10
5	7311.00	46.2 PK	74.0	-27.8	1.00 H	187	2.60	43.60
6	7311.00	41.0 AV	54.0	-13.0	1.00 H	187	-2.60	43.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.3 PK			1.11 V	37	78.30	31.00
2	*2437.00	99.8 AV			1.11 V	37	68.80	31.00
3	4874.00	48.3 PK	74.0	-25.7	1.40 V	71	11.20	37.10
4	4874.00	33.8 AV	54.0	-20.2	1.40 V	71	-3.30	37.10
5	7311.00	46.7 PK	74.0	-27.3	1.00 V	0	3.10	43.60
6	7311.00	40.8 AV	54.0	-13.2	1.00 V	0	-2.80	43.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.8 PK			1.05 H	153	80.70	31.10
2	*2462.00	102.3 AV			1.05 H	153	71.20	31.10
3	2483.50	70.9 PK	74.0	-3.1	1.09 H	180	39.70	31.20
4	2483.50	52.5 AV	54.0	-1.5	1.09 H	180	21.30	31.20
5	4924.00	48.7 PK	74.0	-25.3	1.05 H	55	11.50	37.20
6	4924.00	34.2 AV	54.0	-19.8	1.05 H	55	-3.00	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.5 PK			1.12 V	34	78.40	31.10
2	*2462.00	98.7 AV			1.12 V	34	67.60	31.10
3	2483.50	69.2 PK	74.0	-4.8	1.22 V	294	38.00	31.20
4	2483.50	50.2 AV	54.0	-3.8	1.22 V	294	19.00	31.20
5	4924.00	48.1 PK	74.0	-25.9	1.44 V	52	10.90	37.20
6	4924.00	33.7 AV	54.0	-20.3	1.44 V	52	-3.50	37.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.7 PK	74.0	-1.3	1.09 H	165	41.90	30.80
2	2390.00	52.7 AV	54.0	-1.3	1.09 H	165	21.90	30.80
3	*2412.00	111.2 PK			1.09 H	171	80.30	30.90
4	*2412.00	101.8 AV			1.09 H	171	70.90	30.90
5	4824.00	47.8 PK	74.0	-26.2	1.22 H	325	10.80	37.00
6	4824.00	34.3 AV	54.0	-19.7	1.22 H	325	-2.70	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.5 PK	74.0	-5.5	1.01 V	279	37.70	30.80
2	2390.00	51.6 AV	54.0	-2.4	1.01 V	279	20.80	30.80
3	*2412.00	109.2 PK			1.00 V	276	78.30	30.90
4	*2412.00	99.2 AV			1.00 V	276	68.30	30.90
5	4824.00	47.1 PK	74.0	-26.9	1.00 V	144	10.10	37.00
6	4824.00	34.3 AV	54.0	-19.7	1.00 V	144	-2.70	37.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.0 PK			1.10 H	159	80.00	31.00
2	*2437.00	101.5 AV			1.10 H	159	70.50	31.00
3	4874.00	47.5 PK	74.0	-26.5	1.10 H	310	10.40	37.10
4	4874.00	34.6 AV	54.0	-19.4	1.10 H	310	-2.50	37.10
5	7311.00	48.0 PK	74.0	-26.0	1.10 H	355	4.40	43.60
6	7311.00	41.7 AV	54.0	-12.3	1.10 H	355	-1.90	43.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.8 PK			1.10 V	280	78.80	31.00
2	*2437.00	99.8 AV			1.10 V	280	68.80	31.00
3	4874.00	47.8 PK	74.0	-26.2	1.11 V	250	10.70	37.10
4	4874.00	34.5 AV	54.0	-19.5	1.11 V	250	-2.60	37.10
5	7311.00	46.1 PK	74.0	-27.9	1.10 V	360	2.50	43.60
6	7311.00	41.0 AV	54.0	-13.0	1.10 V	360	-2.60	43.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.9 PK			1.08 H	149	79.80	31.10
2	*2462.00	101.3 AV			1.08 H	149	70.20	31.10
3	2483.50	70.6 PK	74.0	-3.4	1.05 H	158	39.40	31.20
4	2483.50	52.9 AV	54.0	-1.1	1.05 H	158	21.70	31.20
5	4924.00	47.4 PK	74.0	-26.6	1.05 H	255	10.20	37.20
6	4924.00	34.9 AV	54.0	-19.1	1.05 H	255	-2.30	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.1 PK			1.18 V	355	79.00	31.10
2	*2462.00	100.5 AV			1.18 V	355	69.40	31.10
3	2483.50	72.2 PK	74.0	-1.8	1.18 V	355	41.00	31.20
4	2483.50	52.6 AV	54.0	-1.4	1.18 V	355	21.40	31.20
5	4924.00	48.0 PK	74.0	-26.0	1.44 V	266	10.80	37.20
6	4924.00	34.7 AV	54.0	-19.3	1.44 V	266	-2.50	37.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.4 PK	74.0	-9.6	1.12 H	170	33.60	30.80
2	2390.00	52.4 AV	54.0	-1.6	1.12 H	170	21.60	30.80
3	*2422.00	105.3 PK			1.08 H	150	74.40	30.90
4	*2422.00	95.2 AV			1.08 H	150	64.30	30.90
5	4844.00	47.1 PK	74.0	-26.9	1.32 H	245	10.10	37.00
6	4844.00	34.4 AV	54.0	-19.6	1.32 H	245	-2.60	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.0 PK	74.0	-11.0	1.36 V	59	32.20	30.80
2	2390.00	51.3 AV	54.0	-2.7	1.36 V	59	20.50	30.80
3	*2422.00	101.5 PK			1.42 V	303	70.60	30.90
4	*2422.00	93.0 AV			1.42 V	303	62.10	30.90
5	4844.00	47.2 PK	74.0	-26.8	1.05 V	66	10.20	37.00
6	4844.00	34.5 AV	54.0	-19.5	1.05 V	66	-2.50	37.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.5 PK	74.0	-14.5	1.10 H	152	28.70	30.80
2	2390.00	48.1 AV	54.0	-5.9	1.10 H	152	17.30	30.80
3	*2437.00	106.9 PK			1.10 H	152	75.90	31.00
4	*2437.00	96.8 AV			1.10 H	152	65.80	31.00
5	2483.50	62.1 PK	74.0	-11.9	1.10 H	152	30.90	31.20
6	2483.50	47.7 AV	54.0	-6.3	1.10 H	152	16.50	31.20
7	4874.00	47.2 PK	74.0	-26.8	1.28 H	250	10.10	37.10
8	4874.00	34.5 AV	54.0	-19.5	1.28 H	250	-2.60	37.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.6 PK	74.0	-15.4	1.21 V	311	27.80	30.80
2	2390.00	46.2 AV	54.0	-7.8	1.21 V	311	15.40	30.80
3	*2437.00	105.8 PK			1.21 V	311	74.80	31.00
4	*2437.00	96.1 AV			1.21 V	311	65.10	31.00
5	2483.50	64.5 PK	74.0	-9.5	1.21 V	311	33.30	31.20
6	2483.50	44.9 AV	54.0	-9.1	1.21 V	311	13.70	31.20
7	4874.00	47.1 PK	74.0	-26.9	1.10 V	47	10.00	37.10
8	4874.00	34.3 AV	54.0	-19.7	1.10 V	47	-2.80	37.10

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	107.0 PK			1.05 H	148	75.90	31.10
2	*2452.00	97.2 AV			1.05 H	148	66.10	31.10
3	2483.50	67.5 PK	74.0	-6.5	1.05 H	160	36.30	31.20
4	2483.50	52.3 AV	54.0	-1.7	1.05 H	160	21.10	31.20
5	4904.00	47.8 PK	74.0	-26.2	1.02 H	333	10.60	37.20
6	4904.00	34.8 AV	54.0	-19.2	1.02 H	333	-2.40	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	106.0 PK			1.25 V	308	74.90	31.10
2	*2452.00	96.5 AV			1.25 V	308	65.40	31.10
3	2483.50	67.7 PK	74.0	-6.3	1.30 V	80	36.50	31.20
4	2483.50	50.5 AV	54.0	-3.5	1.30 V	80	19.30	31.20
5	4904.00	47.6 PK	74.0	-26.4	1.04 V	44	10.40	37.20
6	4904.00	34.4 AV	54.0	-19.6	1.04 V	44	-2.80	37.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

BELOW 1GHz WORST-CASE DATA : 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	208.77	32.5 QP	43.5	-11.0	1.25 H	131	21.20	11.30
2	274.88	27.6 QP	46.0	-18.4	1.25 H	263	13.60	14.00
3	500.42	32.0 QP	46.0	-14.0	2.00 H	211	12.00	20.00
4	624.85	35.8 QP	46.0	-10.2	1.25 H	316	13.50	22.30
5	751.23	35.0 QP	46.0	-11.0	2.00 H	312	10.60	24.40
6	805.67	34.8 QP	46.0	-11.2	1.00 H	318	9.10	25.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	64.90	32.7 QP	40.0	-7.3	1.24 V	358	19.80	12.90
2	148.50	31.5 QP	43.5	-12.0	1.00 V	275	17.40	14.10
3	210.72	32.6 QP	43.5	-10.9	1.00 V	209	21.20	11.40
4	500.42	31.4 QP	46.0	-14.6	1.00 V	167	11.40	20.00
5	624.85	29.8 QP	46.0	-16.2	1.50 V	29	7.50	22.30
6	751.23	29.9 QP	46.0	-16.1	1.24 V	153	5.50	24.40

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



A D T

4.1.8 TEST RESULTS (B)

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.8 PK	74.0	-17.2	1.25 H	14	26.00	30.80
2	2390.00	46.7 AV	54.0	-7.3	1.25 H	14	15.90	30.80
3	*2412.00	106.9 PK			1.00 H	340	76.00	30.90
4	*2412.00	101.5 AV			1.00 H	340	70.60	30.90
5	4824.00	48.2 PK	74.0	-25.8	1.25 H	32	11.20	37.00
6	4824.00	41.1 AV	54.0	-12.9	1.25 H	32	4.10	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.8 PK	74.0	-16.2	1.13 V	287	27.00	30.80
2	2390.00	47.5 AV	54.0	-6.5	1.13 V	287	16.70	30.80
3	*2412.00	109.9 PK			1.44 V	177	79.00	30.90
4	*2412.00	105.2 AV			1.44 V	177	74.30	30.90
5	4824.00	52.6 PK	74.0	-21.4	1.49 V	6	15.60	37.00
6	4824.00	45.6 AV	54.0	-8.4	1.49 V	6	8.60	37.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.5 PK			1.10 H	310	74.50	31.00
2	*2437.00	101.1 AV			1.10 H	310	70.10	31.00
3	4874.00	49.5 PK	74.0	-24.5	1.20 H	210	12.40	37.10
4	4874.00	41.5 AV	54.0	-12.5	1.20 H	210	4.40	37.10
5	7311.00	48.1 PK	74.0	-25.9	1.00 H	355	4.50	43.60
6	7311.00	40.8 AV	54.0	-13.2	1.00 H	355	-2.80	43.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.2 PK			1.18 V	170	78.20	31.00
2	*2437.00	104.9 AV			1.18 V	170	73.90	31.00
3	4874.00	52.8 PK	74.0	-21.2	1.20 V	93	15.70	37.10
4	4874.00	45.8 AV	54.0	-8.2	1.20 V	93	8.70	37.10
5	7311.00	48.6 PK	74.0	-25.4	1.10 V	10	5.00	43.60
6	7311.00	41.3 AV	54.0	-12.7	1.10 V	10	-2.30	43.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.9 PK			1.27 H	216	73.80	31.10
2	*2462.00	100.6 AV			1.27 H	216	69.50	31.10
3	2483.50	57.4 PK	74.0	-16.6	1.24 H	217	26.20	31.20
4	2483.50	46.1 AV	54.0	-7.9	1.24 H	217	14.90	31.20
5	4924.00	50.7 PK	74.0	-23.3	1.23 H	219	13.50	37.20
6	4924.00	41.6 AV	54.0	-12.4	1.23 H	219	4.40	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.8 PK			1.28 V	276	77.70	31.10
2	*2462.00	104.6 AV			1.28 V	276	73.50	31.10
3	2483.50	58.2 PK	74.0	-15.8	1.02 V	55	27.00	31.20
4	2483.50	47.5 AV	54.0	-6.5	1.02 V	55	16.30	31.20
5	4924.00	52.1 PK	74.0	-21.9	1.22 V	88	14.90	37.20
6	4924.00	46.4 AV	54.0	-7.6	1.22 V	88	9.20	37.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.4 PK	74.0	-2.6	1.29 H	15	40.60	30.80
2	2390.00	51.6 AV	54.0	-2.4	1.29 H	15	20.80	30.80
3	*2412.00	110.0 PK			1.29 H	18	79.10	30.90
4	*2412.00	100.0 AV			1.29 H	18	69.10	30.90
5	4824.00	48.8 PK	74.0	-25.2	1.28 H	84	11.80	37.00
6	4824.00	34.6 AV	54.0	-19.4	1.28 H	84	-2.40	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.6 PK	74.0	-2.4	1.27 V	54	40.80	30.80
2	2390.00	52.5 AV	54.0	-1.5	1.27 V	126	21.70	30.80
3	*2412.00	113.1 PK			1.23 V	31	82.20	30.90
4	*2412.00	103.0 AV			1.23 V	31	72.10	30.90
5	4824.00	47.4 PK	74.0	-26.6	1.24 V	4	10.40	37.00
6	4824.00	34.1 AV	54.0	-19.9	1.24 V	4	-2.90	37.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.8 PK			1.21 H	210	78.80	31.00
2	*2437.00	100.1 AV			1.21 H	210	69.10	31.00
3	4874.00	48.1 PK	74.0	-25.9	1.21 H	97	11.00	37.10
4	4874.00	34.3 AV	54.0	-19.7	1.21 H	97	-2.80	37.10
5	7311.00	48.1 PK	74.0	-25.9	1.11 H	180	4.50	43.60
6	7311.00	41.0 AV	54.0	-13.0	1.11 H	180	-2.60	43.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	112.8 PK			1.21 V	189	81.80	31.00
2	*2437.00	102.9 AV			1.21 V	189	71.90	31.00
3	4874.00	47.9 PK	74.0	-26.1	1.20 V	10	10.80	37.10
4	4874.00	34.5 AV	54.0	-19.5	1.20 V	10	-2.60	37.10
5	7311.00	47.9 PK	74.0	-26.1	1.09 V	360	4.30	43.60
6	7311.00	41.6 AV	54.0	-12.4	1.09 V	360	-2.00	43.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.0 PK			1.06 H	172	79.90	31.10
2	*2462.00	100.3 AV			1.06 H	172	69.20	31.10
3	2483.50	70.9 PK	74.0	-3.1	1.05 H	186	39.70	31.20
4	2483.50	52.2 AV	54.0	-1.8	1.05 H	186	21.00	31.20
5	4924.00	48.5 PK	74.0	-25.5	1.47 H	76	11.30	37.20
6	4924.00	33.9 AV	54.0	-20.1	1.47 H	76	-3.30	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.4 PK			1.27 V	175	81.30	31.10
2	*2462.00	102.5 AV			1.27 V	175	71.40	31.10
3	2483.50	71.5 PK	74.0	-2.5	1.28 V	202	40.30	31.20
4	2483.50	52.5 AV	54.0	-1.5	1.28 V	202	21.30	31.20
5	4924.00	47.9 PK	74.0	-26.1	1.03 V	66	10.70	37.20
6	4924.00	34.1 AV	54.0	-19.9	1.03 V	66	-3.10	37.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.8 PK	74.0	-6.2	1.05 H	350	37.00	30.80
2	2390.00	50.0 AV	54.0	-4.0	1.05 H	350	19.20	30.80
3	*2412.00	109.8 PK			1.10 H	161	78.90	30.90
4	*2412.00	99.5 AV			1.10 H	161	68.60	30.90
5	4824.00	46.8 PK	74.0	-27.2	1.39 H	9	9.80	37.00
6	4824.00	33.7 AV	54.0	-20.3	1.39 H	9	-3.30	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.3 PK	74.0	-1.7	1.03 V	150	41.50	30.80
2	2390.00	52.9 AV	54.0	-1.1	1.03 V	150	22.10	30.80
3	*2412.00	112.0 PK			1.03 V	126	81.10	30.90
4	*2412.00	101.5 AV			1.03 V	126	70.60	30.90
5	4824.00	47.1 PK	74.0	-26.9	1.12 V	325	10.10	37.00
6	4824.00	34.4 AV	54.0	-19.6	1.12 V	325	-2.60	37.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.7 PK			1.07 H	190	78.70	31.00
2	*2437.00	99.7 AV			1.07 H	190	68.70	31.00
3	4874.00	46.7 PK	74.0	-27.3	1.31 H	37	9.60	37.10
4	4874.00	34.5 AV	54.0	-19.5	1.31 H	37	-2.60	37.10
5	7311.00	49.4 PK	74.0	-24.6	1.10 H	0	5.80	43.60
6	7311.00	41.9 AV	54.0	-12.1	1.10 H	0	-1.70	43.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.9 PK			1.20 V	120	80.90	31.00
2	*2437.00	101.7 AV			1.20 V	120	70.70	31.00
3	4874.00	47.3 PK	74.0	-26.7	1.30 V	300	10.20	37.10
4	4874.00	34.6 AV	54.0	-19.4	1.30 V	300	-2.50	37.10
5	7311.00	48.3 PK	74.0	-25.7	1.09 V	360	4.70	43.60
6	7311.00	41.1 AV	54.0	-12.9	1.09 V	360	-2.50	43.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.9 PK			1.06 H	183	78.80	31.10
2	*2462.00	99.8 AV			1.06 H	183	68.70	31.10
3	2483.50	71.3 PK	74.0	-2.7	1.05 H	184	40.10	31.20
4	2483.50	51.7 AV	54.0	-2.3	1.05 H	184	20.50	31.20
5	4924.00	46.6 PK	74.0	-27.4	1.32 H	65	9.40	37.20
6	4924.00	35.1 AV	54.0	-18.9	1.32 H	65	-2.10	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.1 PK			1.43 V	131	81.00	31.10
2	*2462.00	101.9 AV			1.43 V	131	70.80	31.10
3	2483.50	72.1 PK	74.0	-1.9	1.43 V	130	40.90	31.20
4	2483.50	53.0 AV	54.0	-1.0	1.43 V	130	21.80	31.20
5	4924.00	47.4 PK	74.0	-26.6	1.34 V	65	10.20	37.20
6	4924.00	34.7 AV	54.0	-19.3	1.34 V	65	-2.50	37.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.0 PK	74.0	-11.0	1.03 H	18	32.20	30.80
2	2390.00	49.6 AV	54.0	-4.4	1.03 H	18	18.80	30.80
3	*2422.00	101.0 PK			1.03 H	18	70.10	30.90
4	*2422.00	91.1 AV			1.03 H	18	60.20	30.90
5	4844.00	47.0 PK	74.0	-27.0	1.00 H	23	10.00	37.00
6	4844.00	34.3 AV	54.0	-19.7	1.00 H	23	-2.70	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.2 PK	74.0	-7.8	1.02 V	128	35.40	30.80
2	2390.00	52.6 AV	54.0	-1.4	1.02 V	128	21.80	30.80
3	*2422.00	105.6 PK			1.02 V	30	74.70	30.90
4	*2422.00	96.2 AV			1.02 V	30	65.30	30.90
5	4844.00	47.3 PK	74.0	-26.7	1.00 V	123	10.30	37.00
6	4844.00	34.3 AV	54.0	-19.7	1.00 V	123	-2.70	37.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.1 PK	74.0	-15.9	1.05 H	29	27.30	30.80
2	2390.00	44.6 AV	54.0	-9.4	1.05 H	29	13.80	30.80
3	*2437.00	101.5 PK			1.05 H	29	70.50	31.00
4	*2437.00	91.8 AV			1.05 H	29	60.80	31.00
5	2483.50	53.4 PK	74.0	-20.6	1.05 H	29	22.20	31.20
6	2483.50	45.7 AV	54.0	-8.3	1.05 H	29	14.50	31.20
7	4874.00	47.3 PK	74.0	-26.7	1.00 H	23	10.20	37.10
8	4874.00	35.1 AV	54.0	-18.9	1.00 H	23	-2.00	37.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.5 PK	74.0	-12.5	1.01 V	169	30.70	30.80
2	2390.00	48.0 AV	54.0	-6.0	1.01 V	169	17.20	30.80
3	*2437.00	105.5 PK			1.01 V	169	74.50	31.00
4	*2437.00	95.7 AV			1.01 V	169	64.70	31.00
5	2483.50	60.1 PK	74.0	-13.9	1.02 V	172	28.90	31.20
6	2483.50	48.6 AV	54.0	-5.4	1.02 V	172	17.40	31.20
7	4874.00	47.1 PK	74.0	-26.9	1.00 V	210	10.00	37.10
8	4874.00	34.5 AV	54.0	-19.5	1.00 V	210	-2.60	37.10

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	101.7 PK			1.00 H	341	70.60	31.10
2	*2452.00	92.0 AV			1.00 H	341	60.90	31.10
3	2483.50	58.6 PK	74.0	-15.4	1.01 H	340	27.40	31.20
4	2483.50	50.0 AV	54.0	-4.0	1.01 H	340	18.80	31.20
5	4904.00	48.3 PK	74.0	-25.7	1.00 H	147	11.10	37.20
6	4904.00	35.6 AV	54.0	-18.4	1.00 H	147	-1.60	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	105.3 PK			1.02 V	171	74.20	31.10
2	*2452.00	95.0 AV			1.02 V	171	63.90	31.10
3	2483.50	64.8 PK	74.0	-9.2	1.00 V	169	33.60	31.20
4	2483.50	52.7 AV	54.0	-1.3	1.00 V	169	21.50	31.20
5	4904.00	47.0 PK	74.0	-27.0	1.00 V	64	9.80	37.20
6	4904.00	34.7 AV	54.0	-19.3	1.00 V	64	-2.50	37.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



A D T

BELOW 1GHz WORST-CASE DATA : 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	173.78	30.5 QP	43.5	-13.0	1.49 H	8	17.20	13.30
2	243.77	35.4 QP	46.0	-10.6	1.49 H	294	22.60	12.80
3	374.04	26.2 QP	46.0	-19.8	1.00 H	113	9.30	16.90
4	500.42	34.7 QP	46.0	-11.3	1.49 H	141	14.70	20.00
5	624.85	34.9 QP	46.0	-11.1	1.49 H	317	12.60	22.30
6	799.84	34.2 QP	46.0	-11.8	1.00 H	295	8.60	25.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	148.50	32.0 QP	43.5	-11.5	1.50 V	285	17.90	14.10
2	243.77	32.5 QP	46.0	-13.5	1.50 V	186	19.70	12.80
3	500.42	31.9 QP	46.0	-14.1	1.00 V	251	11.90	20.00
4	624.85	29.7 QP	46.0	-16.3	1.50 V	6	7.40	22.30
5	751.23	28.5 QP	46.0	-17.5	1.50 V	142	4.10	24.40
6	799.84	31.2 QP	46.0	-14.8	1.50 V	53	5.60	25.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 23, 2011	Nov. 22, 2012
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 29, 2011	Dec. 28, 2012
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 02, 2012	Jul. 01, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 07, 2012	Feb. 06, 2013
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 TEST PROCEDURES

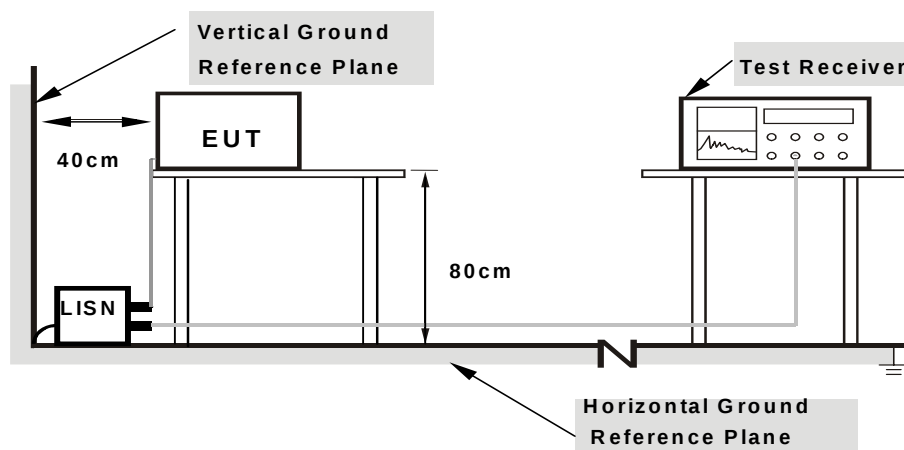
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS (A)

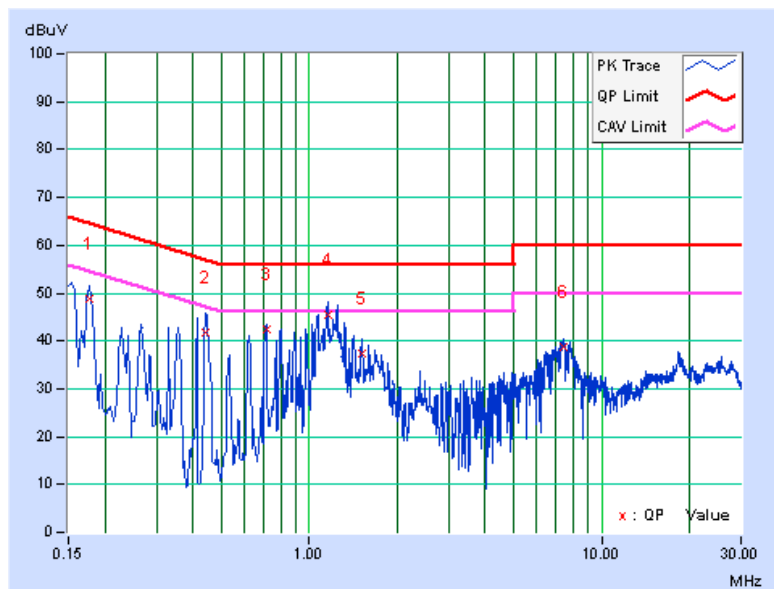
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]	(dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17605	0.21	48.67	46.01	48.88	46.22	64.67	54.67	-15.79	-8.45
2	0.43924	0.24	41.63	37.72	41.87	37.96	57.08	47.08	-15.20	-9.11
3	0.71140	0.28	42.22	41.26	42.50	41.54	56.00	46.00	-13.50	-4.46
4	1.15524	0.31	45.00	40.77	45.31	41.08	56.00	46.00	-10.69	-4.92
5	1.50747	0.33	37.15	32.84	37.48	33.17	56.00	46.00	-18.52	-12.83
6	7.37177	0.48	38.29	27.62	38.77	28.10	60.00	50.00	-21.23	-21.90

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

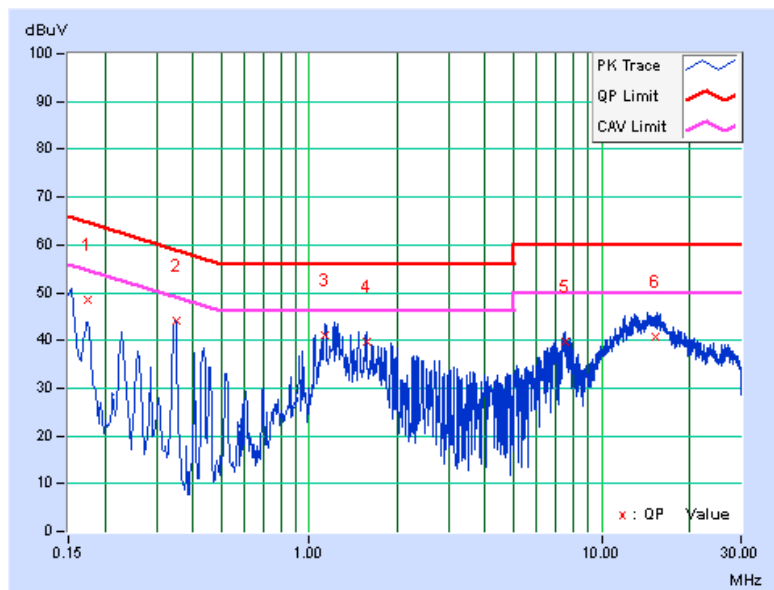


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17374	0.20	48.34	43.66	48.54	43.86	64.78	54.78	-16.24	-10.92
2	0.34941	0.21	43.99	42.46	44.20	42.67	58.98	48.98	-14.77	-6.30
3	1.12519	0.28	40.75	34.40	41.03	34.68	56.00	46.00	-14.97	-11.32
4	1.56824	0.29	39.39	34.29	39.68	34.58	56.00	46.00	-16.32	-11.42
5	7.47343	0.53	39.11	28.60	39.64	29.13	60.00	50.00	-20.36	-20.87
6	15.23478	0.75	40.11	34.67	40.86	35.42	60.00	50.00	-19.14	-14.58

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

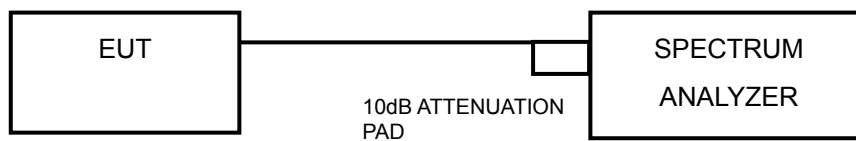


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.3.4 TEST PROCEDURE

- Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.61	0.5	PASS
6	2437	8.13	0.5	PASS
11	2462	8.13	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	16.65	16.63	16.61	0.5	PASS
6	2437	16.64	16.63	16.63	0.5	PASS
11	2462	16.58	16.67	16.57	0.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	17.81	17.77	17.85	0.5	PASS
6	2437	17.86	17.84	17.84	0.5	PASS
11	2462	17.89	17.78	17.87	0.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
3	2422	36.37	36.42	36.30	0.5	PASS
6	2437	36.37	36.50	36.07	0.5	PASS
9	2452	36.48	36.05	36.22	0.5	PASS

4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

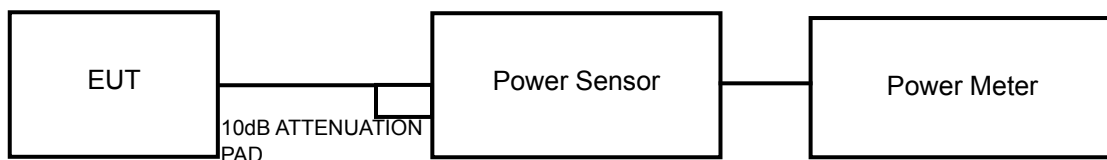
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the peak power level.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	169.82	22.30	30	PASS
6	2437	162.18	22.10	30	PASS
11	2462	158.49	22.00	30	PASS

802.11g

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	21.35	21.44	21.50	417.03	26.20	30	PASS
6	2437	21.30	21.39	21.60	417.16	26.20	30	PASS
11	2462	21.25	21.48	21.62	419.17	26.22	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	23.00	23.50	23.20	632.33	28.01	30	PASS
6	2437	23.10	23.40	23.30	636.75	28.04	30	PASS
11	2462	23.00	23.50	23.40	642.17	28.08	30	PASS

802.11n (40MHz)

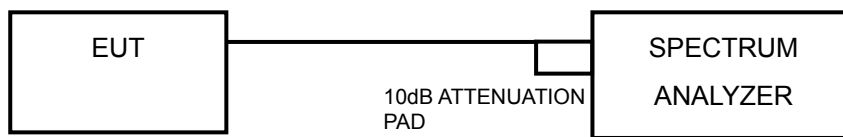
CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
3	2422	18.60	20.30	16.80	227.46	23.57	30	PASS
6	2437	23.00	23.90	22.80	635.54	28.03	30	PASS
9	2452	18.50	20.20	16.90	224.49	23.51	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- Set the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
- Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-5.80	8	PASS
6	2437	-5.71	8	PASS
11	2462	-5.90	8	PASS

802.11g

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-14.63	4.77	-9.86	3.73	PASS
	6	2437	-15.39	4.77	-10.62	3.73	PASS
	11	2462	-14.88	4.77	-10.11	3.73	PASS
1	1	2412	-15.05	4.77	-10.28	3.73	PASS
	6	2437	-14.96	4.77	-10.19	3.73	PASS
	11	2462	-15.17	4.77	-10.40	3.73	PASS
2	1	2412	-14.89	4.77	-10.12	3.73	PASS
	6	2437	-15.09	4.77	-10.32	3.73	PASS
	11	2462	-15.14	4.77	-10.37	3.73	PASS

NOTE: Directional gain = 5.5dBi + 10log(3) = 10.27dBi > 6dBi , so the power density limit shall be reduced to 8-(10.27-6) = 3.73dBm.

802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-14.09	4.77	-9.32	3.73	PASS
	6	2437	-14.20	4.77	-9.43	3.73	PASS
	11	2462	-14.13	4.77	-9.36	3.73	PASS
1	1	2412	-13.54	4.77	-8.77	3.73	PASS
	6	2437	-13.85	4.77	-9.08	3.73	PASS
	11	2462	-13.56	4.77	-8.79	3.73	PASS
2	1	2412	-13.65	4.77	-8.88	3.73	PASS
	6	2437	-13.64	4.77	-8.87	3.73	PASS
	11	2462	-13.63	4.77	-8.86	3.73	PASS

NOTE: Directional gain = 5.5dBi + 10log(3) = 10.27dBi > 6dBi , so the power density limit shall be reduced to 8-(10.27-6) = 3.73dBm.

802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-19.32	4.77	-14.55	3.73	PASS
	6	2437	-16.04	4.77	-11.27	3.73	PASS
	9	2452	-19.58	4.77	-14.81	3.73	PASS
1	3	2422	-18.82	4.77	-14.05	3.73	PASS
	6	2437	-15.46	4.77	-10.69	3.73	PASS
	9	2452	-19.64	4.77	-14.87	3.73	PASS
2	3	2422	-18.88	4.77	-14.11	3.73	PASS
	6	2437	-15.51	4.77	-10.74	3.73	PASS
	9	2452	-18.70	4.77	-13.93	3.73	PASS

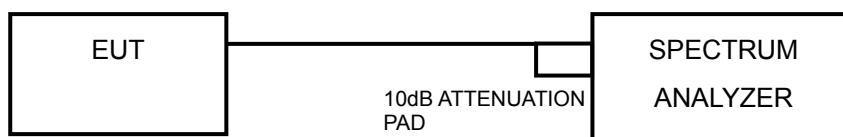
NOTE: Directional gain = 5.5dBi + 10log(3) =10.27dBi > 6dBi , so the power density limit shall be reduced to 8-(10.27-6) =3.73dBm.

4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

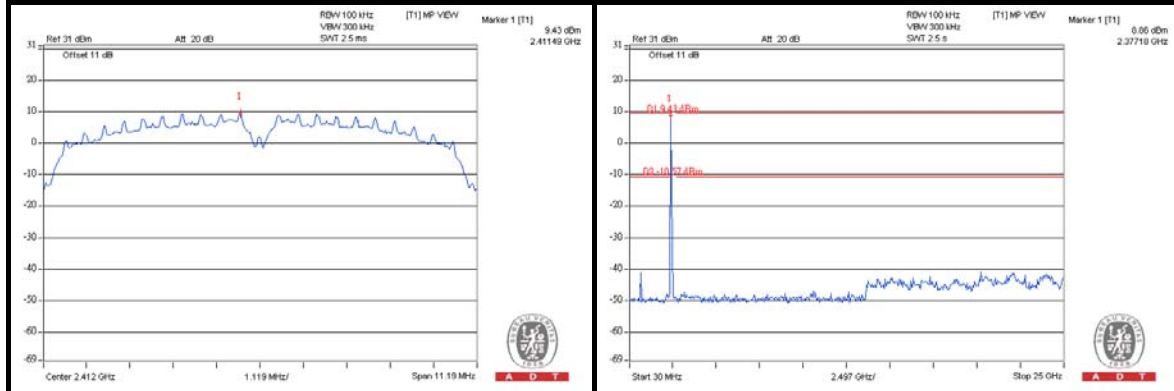
The conducted emission test is performed on each TX port of operating mode without summing or adding $10\log(N)$ since the limit is relative emission limit. Only worst data of each operating mode is presented.

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

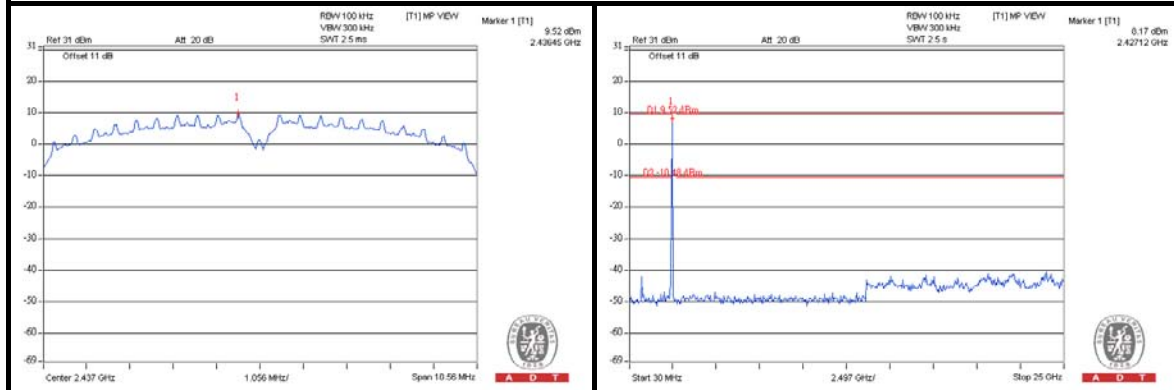
4.6.8 TEST RESULTS

802.11b

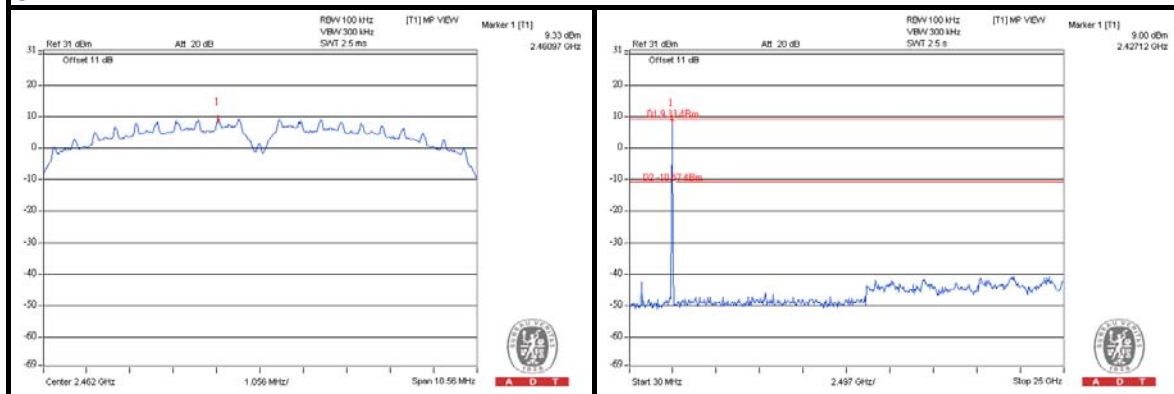
CH 1



CH 6

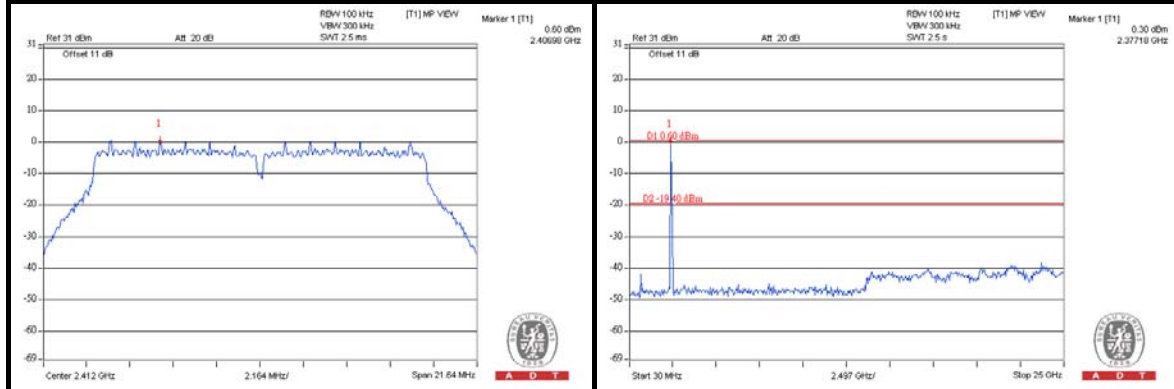


CH 11

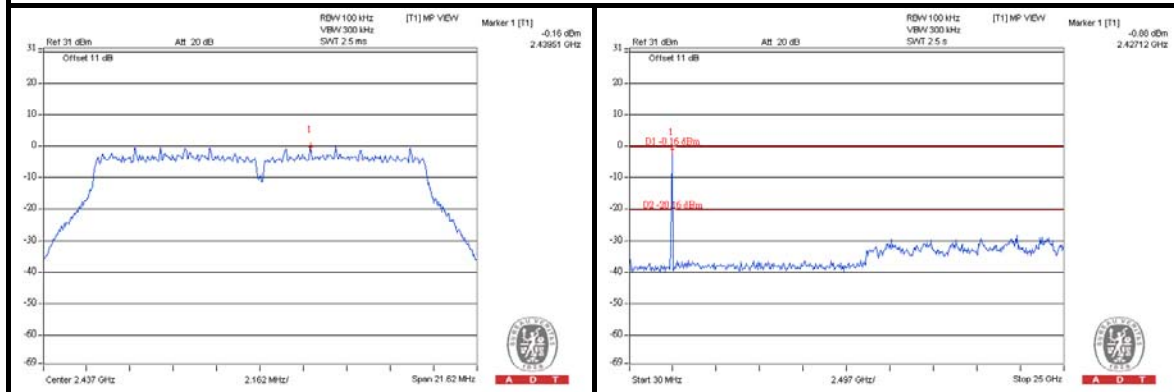


802.11g

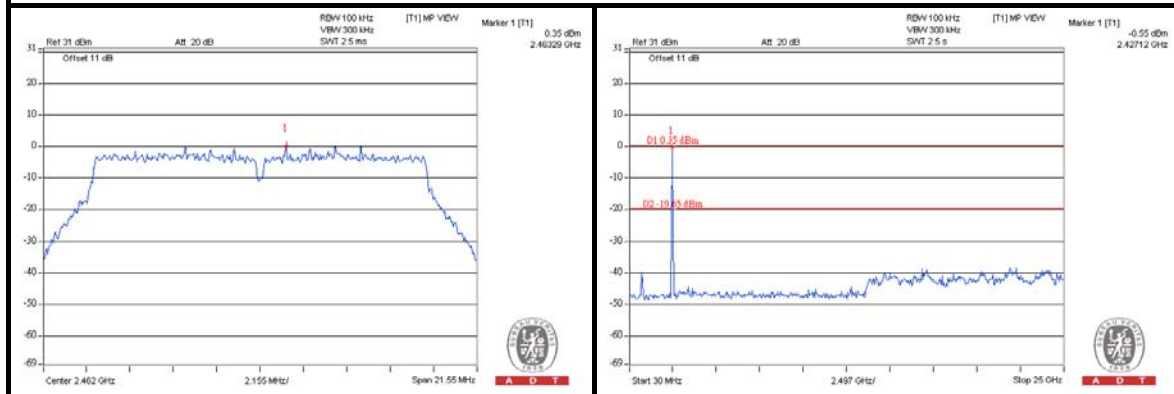
CH 1



CH 6



CH 11

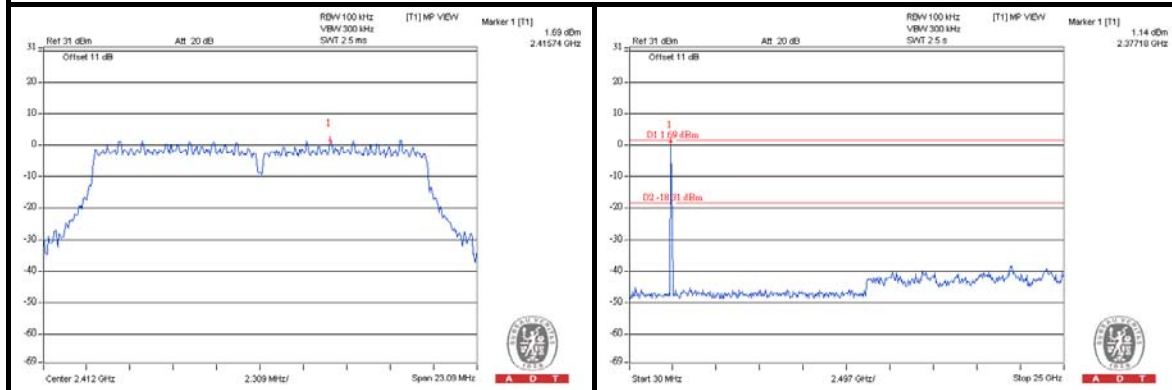




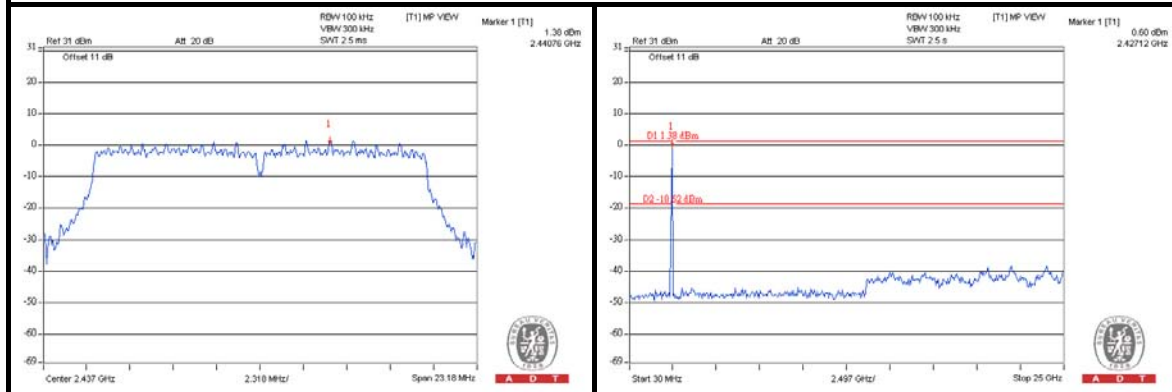
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802.11n (20MHz)

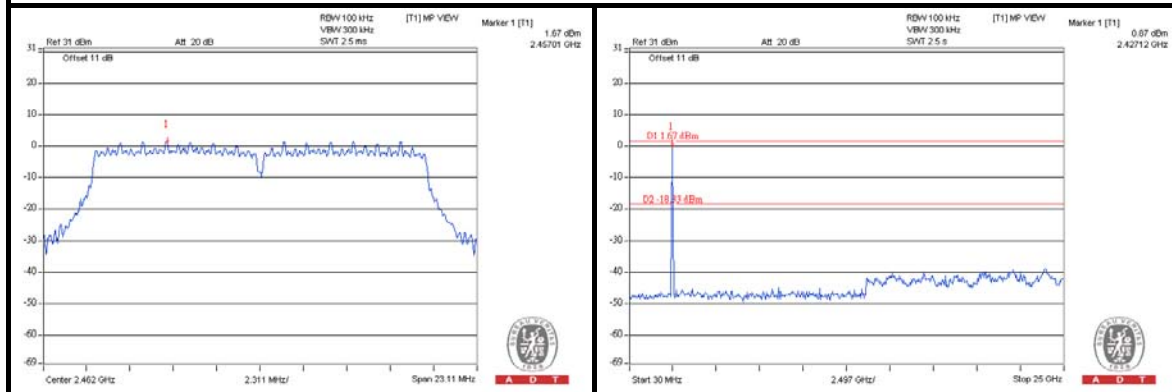
CH 1



CH 6

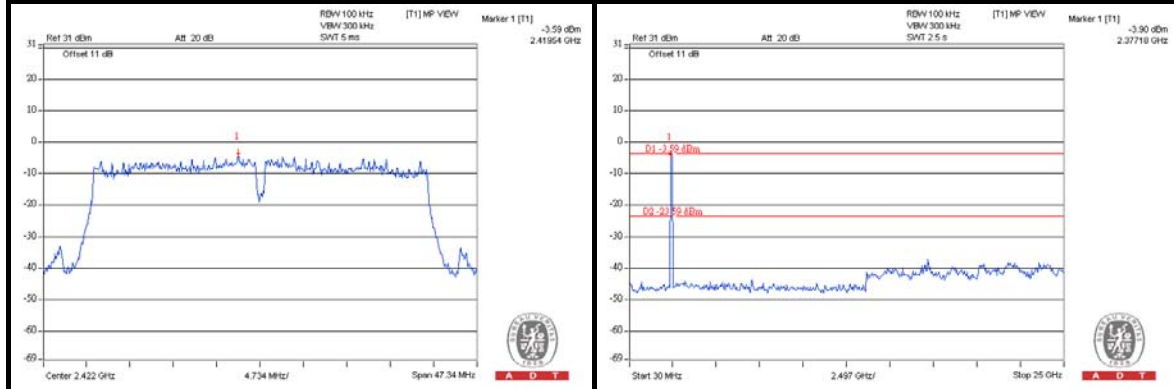


CH 11

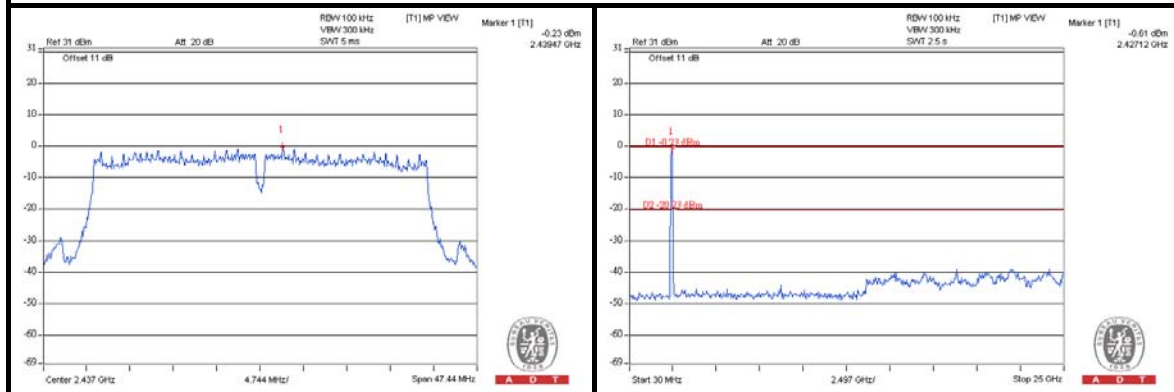


802.11n (40MHz)

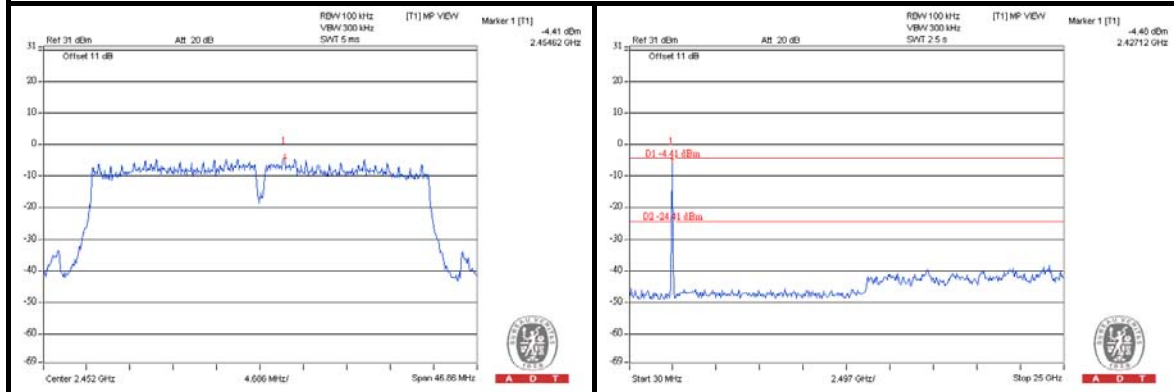
CH 3



CH 6



CH 9



5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



A D T

5.1.2 TEST INSTRUMENTS

Same as item 4.1.2.

5.1.3 TEST PROCEDURES

Same as item 4.1.3.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP

Same as item 4.1.5.

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

5.1.7 TEST RESULTS (A)

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	66.6 PK	87.0	-20.4	1.10 H	150	27.90	38.70
2	#5725.00	55.9 AV	76.3	-20.4	1.10 H	150	17.20	38.70
3	*5745.00	107.0 PK			1.03 H	160	68.30	38.70
4	*5745.00	96.3 AV			1.03 H	160	57.60	38.70
5	11490.00	57.8 PK	74.0	-16.2	1.00 H	128	8.30	49.50
6	11490.00	45.8 AV	54.0	-8.2	1.00 H	128	-3.70	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	67.9 PK	88.3	-20.4	1.01 V	37	29.20	38.70
2	#5725.00	58.5 AV	78.9	-20.4	1.01 V	37	19.80	38.70
3	*5745.00	108.3 PK			1.00 V	40	69.60	38.70
4	*5745.00	98.9 AV			1.00 V	40	60.20	38.70
5	11490.00	58.6 PK	74.0	-15.4	1.04 V	98	9.10	49.50
6	11490.00	46.1 AV	54.0	-7.9	1.04 V	98	-3.40	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	106.1 PK			1.06 H	190	67.30	38.80
2	*5785.00	96.2 AV			1.06 H	190	57.40	38.80
3	11570.00	57.7 PK	74.0	-16.3	1.05 H	127	8.30	49.40
4	11570.00	45.2 AV	54.0	-8.8	1.05 H	127	-4.20	49.40
5	#17355.00	64.8 PK	86.1	-21.3	1.10 H	133	11.80	53.00
6	#17355.00	51.1 AV	76.2	-25.1	1.10 H	133	-1.90	53.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	107.1 PK			1.00 V	159	68.30	38.80
2	*5785.00	97.7 AV			1.00 V	159	58.90	38.80
3	11570.00	58.1 PK	74.0	-15.9	1.04 V	112	8.70	49.40
4	11570.00	45.4 AV	54.0	-8.6	1.04 V	112	-4.00	49.40
5	#17355.00	63.9 PK	87.1	-23.2	1.10 V	148	10.90	53.00
6	#17355.00	50.9 AV	77.7	-26.8	1.10 V	148	-2.10	53.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#": The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	107.5 PK			1.27 H	165	68.60	38.90
2	*5825.00	97.3 AV			1.27 H	165	58.40	38.90
3	#5850.00	57.5 PK	87.5	-30.0	1.17 H	155	18.60	38.90
4	#5850.00	47.3 AV	77.3	-30.0	1.17 H	155	8.40	38.90
5	11650.00	57.4 PK	74.0	-16.6	1.07 H	142	8.10	49.30
6	11650.00	45.2 AV	54.0	-8.8	1.07 H	142	-4.10	49.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	108.7 PK			1.01 V	193	69.80	38.90
2	*5825.00	99.1 AV			1.01 V	193	60.20	38.90
3	#5850.00	58.7 PK	88.7	-30.0	1.10 V	320	19.80	38.90
4	#5850.00	49.1 AV	79.1	-30.0	1.10 V	320	10.20	38.90
5	11650.00	58.1 PK	74.0	-15.9	1.14 V	132	8.80	49.30
6	11650.00	45.3 AV	54.0	-8.7	1.14 V	132	-4.00	49.30

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”: The radiated frequency is out the restricted band.



A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	65.5 PK	88.5	-23.0	1.10 H	184	26.80	38.70
2	#5725.00	55.7 AV	78.7	-23.0	1.10 H	184	17.00	38.70
3	*5745.00	108.5 PK			1.00 H	194	69.80	38.70
4	*5745.00	98.7 AV			1.00 H	194	60.00	38.70
5	11490.00	58.2 PK	74.0	-15.8	1.02 H	76	8.70	49.50
6	11490.00	45.7 AV	54.0	-8.3	1.02 H	76	-3.80	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	66.1 PK	89.1	-23.0	1.10 V	47	27.40	38.70
2	#5725.00	56.1 AV	79.1	-23.0	1.10 V	47	17.40	38.70
3	*5745.00	109.1 PK			1.00 V	41	70.40	38.70
4	*5745.00	99.1 AV			1.00 V	41	60.40	38.70
5	11490.00	58.1 PK	74.0	-15.9	1.14 V	152	8.60	49.50
6	11490.00	46.1 AV	54.0	-7.9	1.14 V	152	-3.40	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	108.4 PK			1.06 H	186	69.60	38.80
2	*5785.00	97.7 AV			1.06 H	186	58.90	38.80
3	11570.00	57.8 PK	74.0	-16.2	1.24 H	55	8.40	49.40
4	11570.00	44.8 AV	54.0	-9.2	1.24 H	55	-4.60	49.40
5	#17355.00	63.9 PK	88.4	-24.5	1.15 H	19	10.90	53.00
6	#17355.00	50.5 AV	77.7	-27.2	1.15 H	19	-2.50	53.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	109.3 PK			1.00 V	42	70.50	38.80
2	*5785.00	100.3 AV			1.00 V	42	61.50	38.80
3	11570.00	57.9 PK	74.0	-16.1	1.14 V	152	8.50	49.40
4	11570.00	45.4 AV	54.0	-8.6	1.14 V	152	-4.00	49.40
5	#17355.00	63.4 PK	89.3	-25.9	1.04 V	112	10.40	53.00
6	#17355.00	51.0 AV	80.3	-29.3	1.04 V	112	-2.00	53.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”: The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	108.7 PK			1.14 H	164	69.80	38.90
2	*5825.00	98.2 AV			1.14 H	164	59.30	38.90
3	#5850.00	62.7 PK	88.7	-26.0	1.10 H	154	23.80	38.90
4	#5850.00	52.2 AV	78.2	-26.0	1.10 H	154	13.30	38.90
5	11650.00	58.1 PK	74.0	-15.9	1.08 H	122	8.80	49.30
6	11650.00	45.5 AV	54.0	-8.5	1.08 H	122	-3.80	49.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	109.3 PK			1.00 V	40	70.40	38.90
2	*5825.00	99.5 AV			1.00 V	40	60.60	38.90
3	#5850.00	63.3 PK	89.3	-26.0	1.00 V	348	24.40	38.90
4	#5850.00	53.5 AV	79.5	-26.0	1.00 V	348	14.60	38.90
5	11650.00	58.1 PK	74.0	-15.9	1.11 V	49	8.80	49.30
6	11650.00	45.2 AV	54.0	-8.8	1.11 V	49	-4.10	49.30

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”: The radiated frequency is out the restricted band.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	63.5 PK	88.5	-25.0	1.10 H	174	24.80	38.70
2	#5725.00	53.9 AV	78.9	-25.0	1.10 H	174	15.20	38.70
3	*5755.00	108.5 PK			1.00 H	194	69.80	38.70
4	*5755.00	98.9 AV			1.00 H	194	60.20	38.70
5	11510.00	57.8 PK	74.0	-16.2	1.04 H	152	8.30	49.50
6	11510.00	45.6 AV	54.0	-8.4	1.04 H	152	-3.90	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	64.8 PK	89.8	-25.0	1.00 V	40	26.10	38.70
2	#5725.00	54.2 AV	79.2	-25.0	1.00 V	40	15.50	38.70
3	*5755.00	109.8 PK			1.00 V	41	71.10	38.70
4	*5755.00	99.2 AV			1.00 V	41	60.50	38.70
5	11510.00	58.6 PK	74.0	-15.4	1.14 V	115	9.10	49.50
6	11510.00	45.8 AV	54.0	-8.2	1.14 V	115	-3.70	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	108.7 PK			1.06 H	192	69.90	38.80
2	*5795.00	98.4 AV			1.06 H	192	59.60	38.80
3	#5850.00	61.7 PK	88.7	-27.0	1.10 H	125	22.80	38.90
4	#5850.00	51.4 AV	78.4	-27.0	1.10 H	125	12.50	38.90
5	11590.00	59.1 PK	74.0	-14.9	1.02 H	78	9.70	49.40
6	11590.00	45.6 AV	54.0	-8.4	1.02 H	78	-3.80	49.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	109.8 PK			1.13 V	164	71.00	38.80
2	*5795.00	99.2 AV			1.13 V	164	60.40	38.80
3	#5850.00	62.8 PK	89.8	-27.0	1.10 V	340	23.90	38.90
4	#5850.00	52.2 AV	79.2	-27.0	1.10 V	340	13.30	38.90
5	11590.00	57.7 PK	74.0	-16.3	1.12 V	99	8.30	49.40
6	11590.00	45.3 AV	54.0	-8.7	1.12 V	99	-4.10	49.40

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”: The radiated frequency is out the restricted band.



A D T

BELOW 1GHz WORST-CASE DATA : 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	208.77	32.1 QP	43.5	-11.4	1.00 H	106	20.80	11.30
2	243.77	32.4 QP	46.0	-13.6	1.25 H	224	19.60	12.80
3	500.42	30.9 QP	46.0	-15.1	1.50 H	144	10.90	20.00
4	624.85	36.4 QP	46.0	-9.6	1.25 H	326	14.10	22.30
5	739.57	26.4 QP	46.0	-19.6	2.00 H	286	2.40	24.00
6	920.38	30.8 QP	46.0	-15.2	1.00 H	241	3.80	27.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	64.90	32.2 QP	40.0	-7.8	1.24 V	13	19.30	12.90
2	148.50	30.6 QP	43.5	-12.9	1.00 V	253	16.50	14.10
3	208.77	32.4 QP	43.5	-11.1	1.50 V	211	21.10	11.30
4	500.42	32.4 QP	46.0	-13.6	1.00 V	173	12.40	20.00
5	624.85	30.1 QP	46.0	-15.9	1.50 V	39	7.80	22.30
6	751.23	30.5 QP	46.0	-15.5	2.00 V	177	6.10	24.40

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

5.1.8 TEST RESULTS (B)

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	60.7 PK	84.3	-23.6	1.00 H	282	22.00	38.70
2	#5725.00	51.3 AV	74.9	-23.6	1.00 H	282	12.60	38.70
3	*5745.00	104.3 PK			1.06 H	4	65.60	38.70
4	*5745.00	94.9 AV			1.06 H	4	56.20	38.70
5	11490.00	58.1 PK	74.0	-15.9	1.14 H	152	8.60	49.50
6	11490.00	46.2 AV	54.0	-7.8	1.14 H	152	-3.30	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	67.0 PK	90.6	-23.6	1.00 V	282	28.30	38.70
2	#5725.00	57.4 AV	81.0	-23.6	1.00 V	282	18.70	38.70
3	*5745.00	110.6 PK			1.00 V	269	71.90	38.70
4	*5745.00	101.0 AV			1.00 V	269	62.30	38.70
5	11490.00	57.9 PK	74.0	-16.1	1.00 V	158	8.40	49.50
6	11490.00	46.1 AV	54.0	-7.9	1.00 V	158	-3.40	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	104.9 PK			1.00 H	345	66.10	38.80
2	*5785.00	94.4 AV			1.00 H	345	55.60	38.80
3	11570.00	57.5 PK	74.0	-16.5	1.07 H	146	8.10	49.40
4	11570.00	45.0 AV	54.0	-9.0	1.07 H	146	-4.40	49.40
5	#17355.00	63.6 PK	84.9	-21.3	1.00 H	147	10.60	53.00
6	#17355.00	50.9 AV	74.4	-23.5	1.00 H	147	-2.10	53.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	109.7 PK			1.00 V	268	70.90	38.80
2	*5785.00	98.9 AV			1.00 V	268	60.10	38.80
3	11570.00	58.9 PK	74.0	-15.1	1.00 V	268	9.50	49.40
4	11570.00	46.2 AV	54.0	-7.8	1.00 V	268	-3.20	49.40
5	#17355.00	63.7 PK	89.7	-26.0	1.47 V	125	10.70	53.00
6	#17355.00	50.9 AV	78.9	-28.0	1.47 V	125	-2.10	53.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”: The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	104.6 PK			1.17 H	4	65.70	38.90
2	*5825.00	94.3 AV			1.17 H	4	55.40	38.90
3	#5850.00	55.6 PK	84.6	-29.0	1.00 H	314	16.70	38.90
4	#5850.00	45.3 AV	74.3	-29.0	1.00 H	314	6.40	38.90
5	11650.00	57.4 PK	74.0	-16.6	1.14 H	168	8.10	49.30
6	11650.00	45.4 AV	54.0	-8.6	1.14 H	168	-3.90	49.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	108.0 PK			1.00 V	269	69.10	38.90
2	*5825.00	97.7 AV			1.00 V	269	58.80	38.90
3	#5850.00	59.0 PK	88.0	-29.0	1.00 V	314	20.10	38.90
4	#5850.00	48.7 AV	77.7	-29.0	1.00 V	314	9.80	38.90
5	11650.00	57.5 PK	74.0	-16.5	1.07 V	116	8.20	49.30
6	11650.00	45.4 AV	54.0	-8.6	1.07 V	116	-3.90	49.30

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”: The radiated frequency is out the restricted band.



A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	64.0 PK	84.0	-20.0	1.00 H	360	25.30	38.70
2	#5725.00	54.0 AV	74.0	-20.0	1.00 H	360	15.30	38.70
3	*5745.00	104.0 PK			1.06 H	360	65.30	38.70
4	*5745.00	94.0 AV			1.06 H	360	55.30	38.70
5	11490.00	57.4 PK	74.0	-16.6	1.47 H	152	7.90	49.50
6	11490.00	46.7 AV	54.0	-7.3	1.47 H	152	-2.80	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	68.1 PK	88.1	-20.0	1.00 V	360	29.40	38.70
2	#5725.00	58.1 AV	78.1	-20.0	1.00 V	360	19.40	38.70
3	*5745.00	108.1 PK			1.00 V	267	69.40	38.70
4	*5745.00	98.1 AV			1.00 V	267	59.40	38.70
5	11490.00	58.5 PK	74.0	-15.5	1.24 V	155	9.00	49.50
6	11490.00	48.1 AV	54.0	-5.9	1.24 V	155	-1.40	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#": The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	104.8 PK			1.00 H	343	66.00	38.80
2	*5785.00	94.3 AV			1.00 H	343	55.50	38.80
3	11570.00	57.4 PK	74.0	-16.6	1.09 H	147	8.00	49.40
4	11570.00	44.8 AV	54.0	-9.2	1.09 H	147	-4.60	49.40
5	#17355.00	64.6 PK	84.8	-20.2	1.15 H	129	11.60	53.00
6	#17355.00	51.0 AV	74.3	-23.3	1.15 H	129	-2.00	53.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	109.1 PK			1.00 V	297	70.30	38.80
2	*5785.00	99.5 AV			1.00 V	297	60.70	38.80
3	11570.00	58.4 PK	74.0	-15.6	1.17 V	152	9.00	49.40
4	11570.00	45.1 AV	54.0	-8.9	1.17 V	152	-4.30	49.40
5	#17355.00	65.0 PK	89.1	-24.1	1.07 V	163	12.00	53.00
6	#17355.00	50.9 AV	79.5	-28.6	1.07 V	163	-2.10	53.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	104.1 PK			1.24 H	309	65.20	38.90
2	*5825.00	94.9 AV			1.24 H	309	56.00	38.90
3	#5850.00	55.1 PK	84.1	-29.0	1.00 H	312	16.20	38.90
4	#5850.00	45.9 AV	74.9	-29.0	1.00 H	312	7.00	38.90
5	11650.00	57.9 PK	74.0	-16.1	1.04 H	97	8.60	49.30
6	11650.00	45.2 AV	54.0	-8.8	1.04 H	97	-4.10	49.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	109.2 PK			1.00 V	268	70.30	38.90
2	*5825.00	98.6 AV			1.00 V	268	59.70	38.90
3	#5850.00	60.2 PK	89.2	-29.0	1.00 V	312	21.30	38.90
4	#5850.00	49.6 AV	78.6	-29.0	1.00 V	312	10.70	38.90
5	11650.00	58.2 PK	74.0	-15.8	1.44 V	152	8.90	49.30
6	11650.00	44.9 AV	54.0	-9.1	1.44 V	152	-4.40	49.30

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”: The radiated frequency is out the restricted band.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	67.4 PK	84.4	-17.0	1.00 H	360	28.70	38.70
2	#5725.00	57.5 AV	74.5	-17.0	1.00 H	360	18.80	38.70
3	*5755.00	104.4 PK			1.07 H	5	65.70	38.70
4	*5755.00	94.5 AV			1.07 H	5	55.80	38.70
5	11510.00	57.7 PK	74.0	-16.3	1.16 H	254	8.20	49.50
6	11510.00	45.7 AV	54.0	-8.3	1.16 H	254	-3.80	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	71.4 PK	88.4	-17.0	1.00 V	360	32.70	38.70
2	#5725.00	61.4 AV	78.4	-17.0	1.00 V	360	22.70	38.70
3	*5755.00	108.4 PK			1.00 V	253	69.70	38.70
4	*5755.00	98.4 AV			1.00 V	253	59.70	38.70
5	11510.00	57.8 PK	74.0	-16.2	1.08 V	55	8.30	49.50
6	11510.00	45.4 AV	54.0	-8.6	1.08 V	55	-4.10	49.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	104.1 PK			1.20 H	345	65.30	38.80
2	*5795.00	94.9 AV			1.20 H	345	56.10	38.80
3	#5850.00	55.1 PK	84.1	-29.0	1.10 H	313	16.20	38.90
4	#5850.00	45.9 AV	74.9	-29.0	1.10 H	313	7.00	38.90
5	11590.00	57.2 PK	74.0	-16.8	1.07 H	144	7.80	49.40
6	11590.00	44.4 AV	54.0	-9.6	1.07 H	144	-5.00	49.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	108.5 PK			1.00 V	268	69.70	38.80
2	*5795.00	98.1 AV			1.00 V	268	59.30	38.80
3	#5850.00	59.5 PK	88.5	-29.0	1.10 V	313	20.60	38.90
4	#5850.00	49.1 AV	78.1	-29.0	1.10 V	313	10.20	38.90
5	11590.00	57.9 PK	74.0	-16.1	1.14 V	152	8.50	49.40
6	11590.00	45.3 AV	54.0	-8.7	1.14 V	152	-4.10	49.40

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “ # ”: The radiated frequency is out the restricted band.



A D T

BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	154.33	31.5 QP	43.5	-12.0	1.50 H	274	17.40	14.10
2	204.89	29.9 QP	43.5	-13.6	1.50 H	120	18.70	11.20
3	374.04	25.9 QP	46.0	-20.1	1.00 H	251	9.00	16.90
4	500.42	33.7 QP	46.0	-12.3	1.50 H	139	13.70	20.00
5	624.85	33.3 QP	46.0	-12.7	1.50 H	320	11.00	22.30
6	751.23	32.4 QP	46.0	-13.6	1.00 H	301	8.00	24.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	64.90	32.9 QP	40.0	-7.1	1.00 V	356	20.00	12.90
2	148.50	32.7 QP	43.5	-10.8	1.00 V	300	18.60	14.10
3	202.94	32.1 QP	43.5	-11.4	1.00 V	214	21.00	11.10
4	500.42	30.7 QP	46.0	-15.3	1.00 V	267	10.70	20.00
5	624.85	29.8 QP	46.0	-16.2	1.49 V	14	7.50	22.30
6	799.84	31.0 QP	46.0	-15.0	1.49 V	49	5.40	25.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.2.2 TEST INSTRUMENTS

Same as item 4.2.2.

5.2.3 TEST PROCEDURES

Same as item 4.2.3.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

5.2.5 TEST SETUP

Same as item 4.2.5.

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS (B)

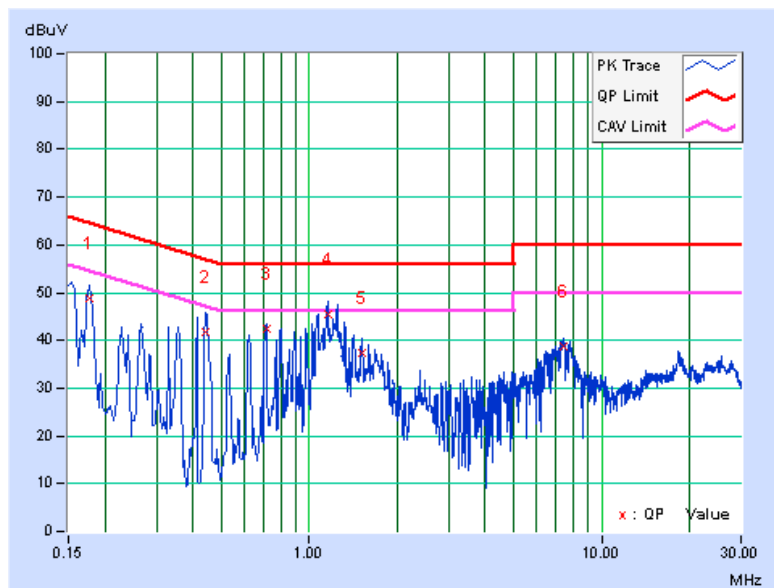
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17605	0.21	48.67	46.01	48.88	46.22	64.67	54.67	-15.79	-8.45
2	0.43924	0.24	41.63	37.72	41.87	37.96	57.08	47.08	-15.20	-9.11
3	0.71140	0.28	42.22	41.26	42.50	41.54	56.00	46.00	-13.50	-4.46
4	1.15524	0.31	45.00	40.77	45.31	41.08	56.00	46.00	-10.69	-4.92
5	1.50747	0.33	37.15	32.84	37.48	33.17	56.00	46.00	-18.52	-12.83
6	7.37177	0.48	38.29	27.62	38.77	28.10	60.00	50.00	-21.23	-21.90

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

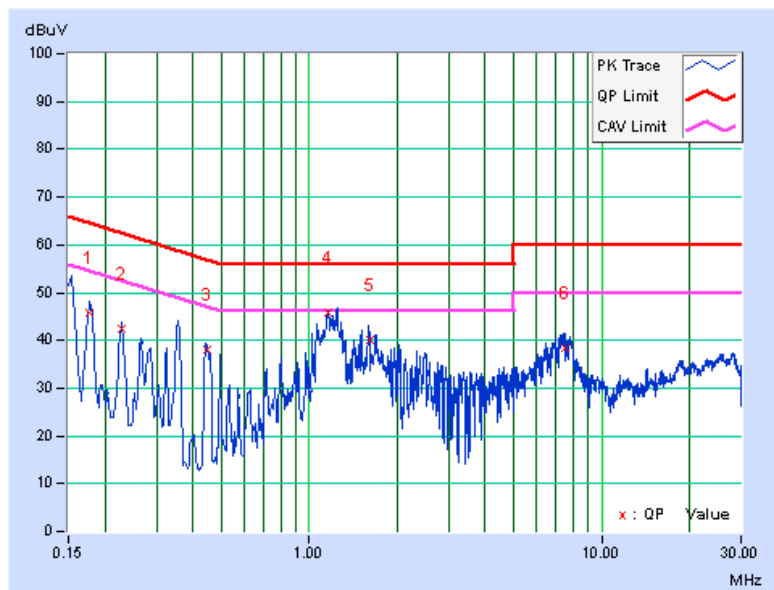


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17605	0.20	45.57	41.03	45.77	41.23	64.67	54.67	-18.90	-13.44
2	0.22672	0.20	42.29	41.14	42.49	41.34	62.57	52.57	-20.08	-11.23
3	0.44716	0.22	37.85	36.38	38.07	36.60	56.93	46.93	-18.85	-10.32
4	1.15524	0.28	45.38	40.80	45.66	41.08	56.00	46.00	-10.34	-4.92
5	1.60452	0.29	39.77	33.72	40.06	34.01	56.00	46.00	-15.94	-11.99
6	7.48158	0.53	37.73	20.11	38.26	20.64	60.00	50.00	-21.74	-29.36

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

5.3.2 TEST SETUP

Same as item 4.3.2.

5.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.3.4 TEST PROCEDURE

Same as item 4.3.4.

5.3.5 DEVIATION FROM TEST STANDARD

No deviation.

5.3.6 EUT OPERATING CONDITIONS

Same as item 4.3.6.

5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	16.69	16.65	16.64	0.5	PASS
157	5785	16.73	16.61	16.66	0.5	PASS
165	5825	16.66	16.74	16.68	0.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	17.81	17.79	17.77	0.5	PASS
157	5785	17.83	17.79	17.77	0.5	PASS
165	5825	17.77	17.78	17.80	0.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
151	5755	36.77	36.69	36.08	0.5	PASS
159	5795	36.29	36.47	36.46	0.5	PASS

5.4 CONDUCTED OUTPUT POWER

5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = $5 \log(NANT/NSS)$ dB or 3 dB, whichever is less for 20-MHz channel widths with $NANT \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(NANT/NSS)$ dB.

5.4.2 TEST SETUP

Same as Item 4.4.2.

5.4.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.4.4 TEST PROCEDURES

Same as Item 4.4.4.

5.4.5 DEVIATION FROM TEST STANDARD

No deviation.

5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

5.4.7 TEST RESULTS

802.11a

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	21.00	20.50	20.20	342.81	25.35	30	PASS
157	5785	20.90	20.60	20.00	337.84	25.29	30	PASS
165	5825	21.20	20.50	20.00	344.03	25.37	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	22.10	21.60	21.50	447.98	26.51	30	PASS
157	5785	22.00	21.40	20.80	416.75	26.20	30	PASS
165	5825	22.10	21.60	20.80	426.95	26.30	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
151	5755	22.50	21.50	21.00	444.97	26.48	30	PASS
159	5795	22.20	21.50	21.10	436.04	26.40	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST SETUP

Same as item 4.5.2.

5.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.5.4 TEST PROCEDURE.

Same as item 4.5.4.

5.5.5 DEVIATION FROM TEST STANDARD

No deviation.

5.5.6 EUT OPERATING CONDITION

Same as item 4.3.6.

5.5.7 TEST RESULTS

802.11a

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-14.55	4.77	-9.78	3.43	PASS
	157	5785	-14.85	4.77	-10.08	3.43	PASS
	165	5825	-14.84	4.77	-10.07	3.43	PASS
1	149	5745	-16.11	4.77	-11.34	3.43	PASS
	157	5785	-16.04	4.77	-11.27	3.43	PASS
	165	5825	-15.99	4.77	-11.22	3.43	PASS
2	149	5745	-15.95	4.77	-11.18	3.43	PASS
	157	5785	-15.92	4.77	-11.15	3.43	PASS
	165	5825	-15.94	4.77	-11.17	3.43	PASS

NOTE: Directional gain = 5.8dBi + 10log(3) = 10.57dBi > 6dBi , so the power density limit shall be reduced to 8-(10.57-6) = 3.43dBm.

802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-13.57	4.77	-8.80	3.43	PASS
	157	5785	-13.46	4.77	-8.69	3.43	PASS
	165	5825	-13.67	4.77	-8.90	3.43	PASS
1	149	5745	-15.33	4.77	-10.56	3.43	PASS
	157	5785	-15.10	4.77	-10.33	3.43	PASS
	165	5825	-15.24	4.77	-10.47	3.43	PASS
2	149	5745	-15.04	4.77	-10.27	3.43	PASS
	157	5785	-15.08	4.77	-10.31	3.43	PASS
	165	5825	-14.94	4.77	-10.17	3.43	PASS

NOTE: Directional gain = 5.8dBi + 10log(3) = 10.57dBi > 6dBi , so the power density limit shall be reduced to 8-(10.57-6) = 3.43dBm.

802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-15.49	4.77	-10.72	3.43	PASS
	159	5795	-15.77	4.77	-11.00	3.43	PASS
1	151	5755	-17.00	4.77	-12.23	3.43	PASS
	159	5795	-16.79	4.77	-12.02	3.43	PASS
2	151	5755	-17.33	4.77	-12.56	3.43	PASS
	159	5795	-17.02	4.77	-12.25	3.43	PASS

NOTE: Directional gain = 5.8dBi + 10log(3) = 10.57dBi > 6dBi , so the power density limit shall be reduced to 8-(10.57-6) = 3.43dBm.

5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST SETUP

Same as Item 4.6.2

5.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.6.4 TEST PROCEDURE

Same as Item 4.6.4

5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

5.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

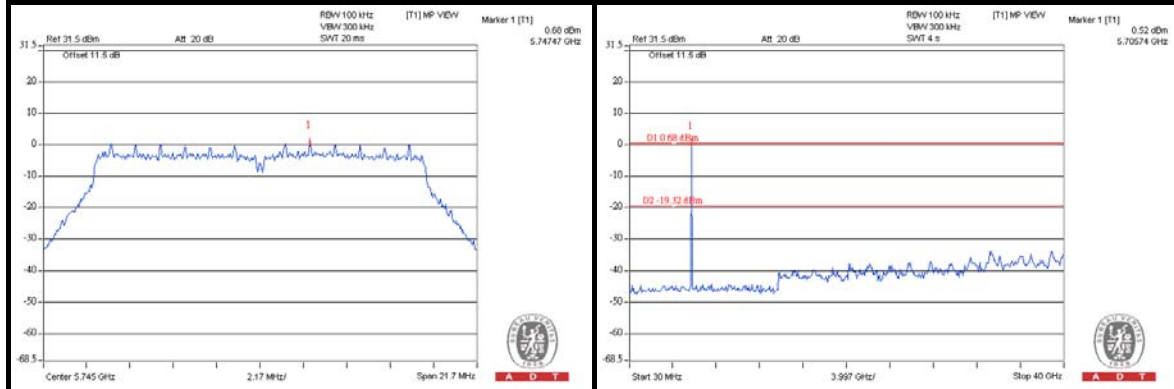
5.6.7 TEST RESULTS

The conducted emission test is performed on each TX port of operating mode without summing or adding $10\log(N)$ since the limit is relative emission limit. Only worst data of each operating mode is presented.

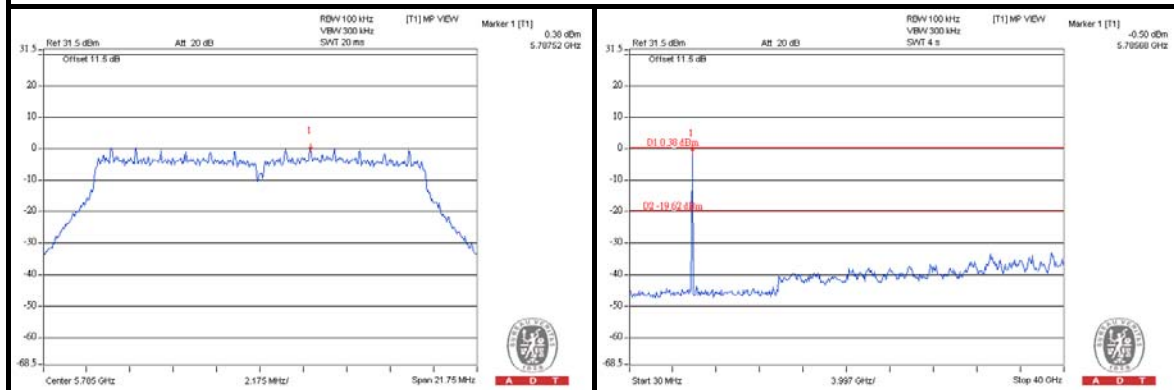
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11a

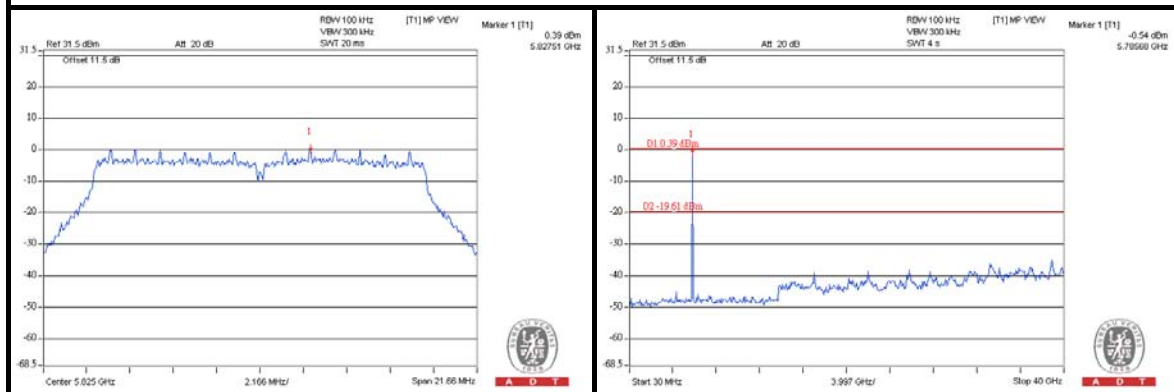
CH 149



CH 157

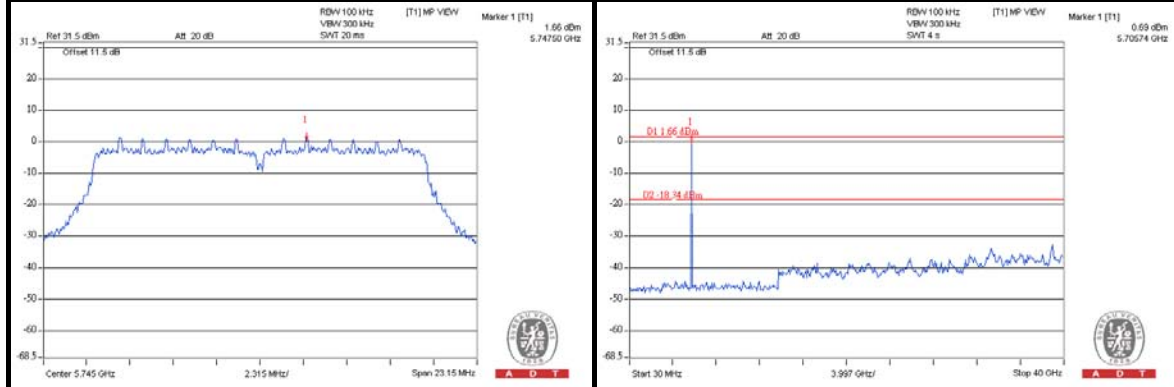


CH 165

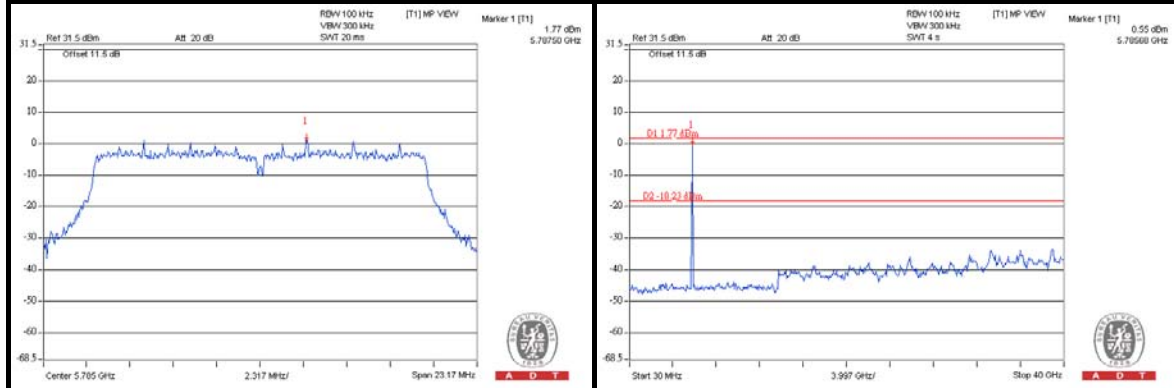


802.11n (20MHz)

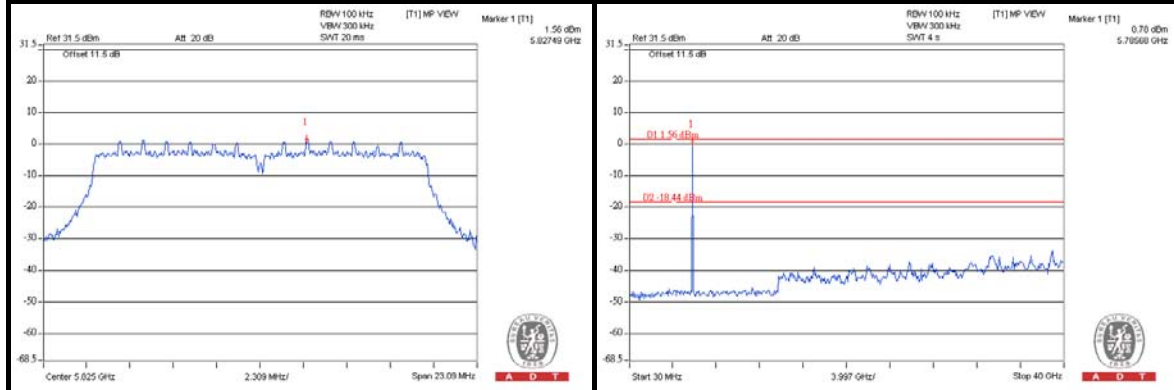
CH 149



CH 157

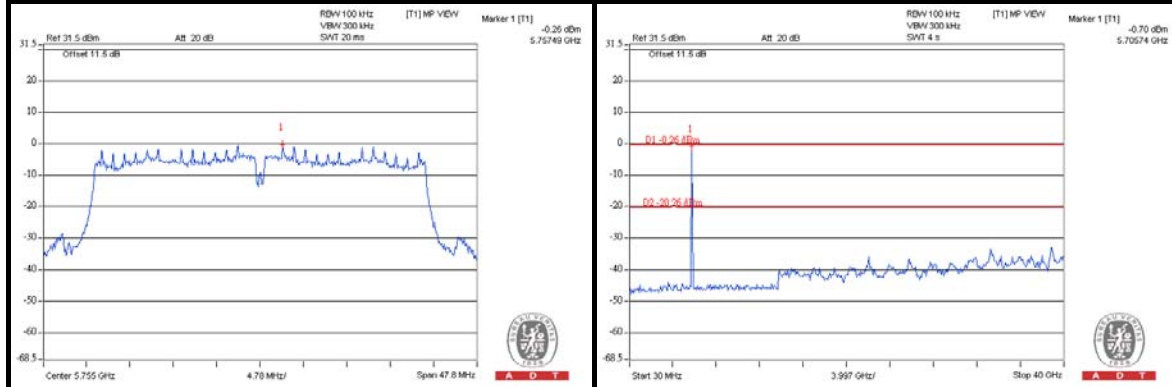


CH 165

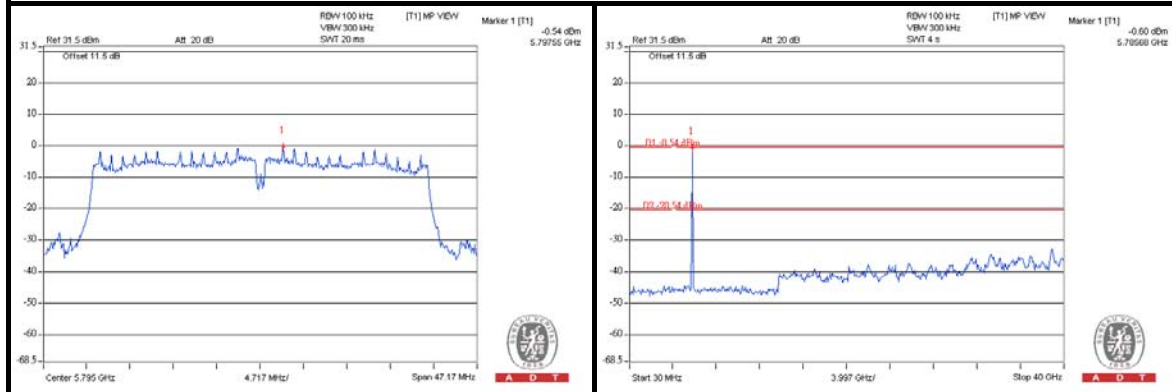


802.11n (40MHz)

CH 151



CH 159





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6. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



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7. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.



A D T

8. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---